# MEDICAL PROCEEDINGS
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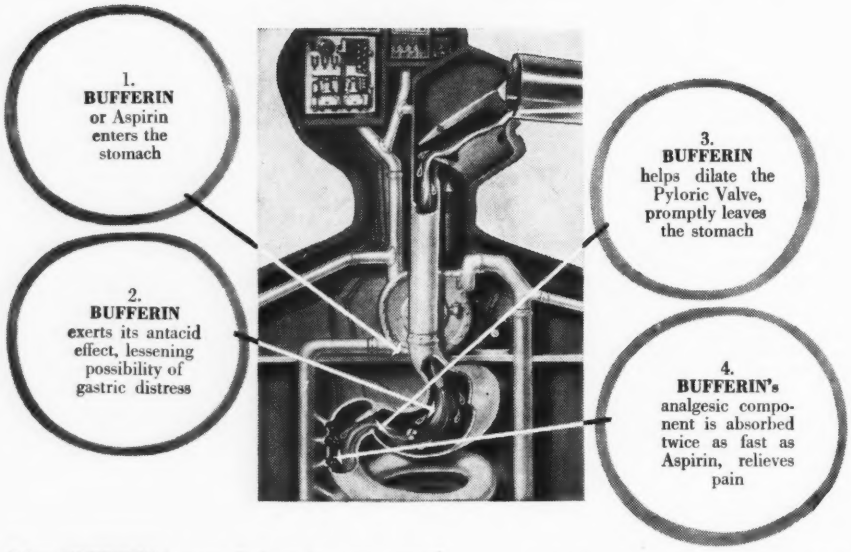


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# Medical Proceedings · Mediese Bydraes

Vol. 2 · No. 4 INDEX · INHOUD April 1956

Pfizer

INTERNATIONAL

# medical news bulletin

Current Developments in the Fields of Antibiotics, Hormones, Nutrition and Clinical Medicine

Prepared for Physicians by the Medical Dept. of Pfizer International, Inc., 25 Broad Street, New York 4 N.Y. U.S.A.

Vol. 111, No. 3, 1956

## ANTIBIOTICS AROUND THE WORLD

ANTIBIOTICS ESSENTIAL IN BACTEREMIA AND SHOCK - "Early and effective therapy with antibacterial agents is an essential requirement" in bacteremia associated with shock, state Gold and Hall[1] in a report on 35 patients, most frequently with malignant neoplasm. Sources of bacteremia were genitourinary tract, cutaneous suppuration, biliary tract, peritonitis, and lobar pneumonia. Authors emphasize "the great value of a proper selection of antibiotics guided by antibacterial susceptibility tests...." "Almost all patients given ineffective drugs died, but the mortality rate was only 30% in those whose antibiotics were well chosen." Because therapy must be begun before the in vitro antibiotic susceptibility of the responsible organisms has been determined, it "seems logical" to combine a bactericidal antibiotic with a broad-spectrum. "At first parenteral administration is preferable," since gastrointestinal absorption is not reliable in patients with shock.

"LIBERAL ADMINISTRATION" OF BROAD-SPECTRUMS IS RECOMMENDED as preoperative preparation and postoperative therapy in cases of ureterosigmoidostomy. In addition to usual preparation aimed at making the bowel as clean and sterile as possible, Campbell[2] recommends that patients be given 500 mg. tetracycline,* Terramycin®† or chlortetracycline q. 6 h. for 4-6 days before operation or, alternatively, a sulfa for 1 week before operation. A broad-spectrum antibiotic acting against gram-negative bacilli in particular should be again "employed liberally" for 10 days postoperatively.

THERAPY BASED ON "KNOWN CLINICAL EFFECTIVENESS" OF ANTIBIOTICS - Brannick and colleagues[3] of the Mayo Clinic tested tissue and serum values of Terramycin, tetracycline and chlortetracycline on small groups of patients undergoing thyroidectomy for cysts and adenomas. They emphasize that the choice of drug should be based on the "in vitro sensitivity of the infecting organisms and the known clinical effectiveness of the particular antibiotic in treatment of the infection." Authors report that "tetracycline gives considerably higher values than does either of the other two antibiotics both in the blood serum and in thyroid tissue.... It is suggested that in infections caused by organisms equally sensitive to all three tetracycline antibiotics, tetracycline would be the drug of choice."

ANTIBIOTIC PROPHYLAXIS AND THERAPY IN PREMATURES - According to Kendall[4] (Temple Univ.) antibiotics should be given as prophylaxis to infants born after membranes have been ruptured for 24 hours or longer prior to delivery, to those

*Tetracycline available from Pfizer under the brand names Tetracyn,® Tetracyn SF.
†Brand of oxytetracycline.

infants requiring an endotracheal catheter as a resuscitative measure and to infants exhibiting respiratory difficulty. Dosage: crystalline aqueous penicillin 25 mg. q. 12 h. administered parenterally for 3 days. If an antibiotic is indicated after this period, 25 mg./Kg. tetracycline may be given orally each day in 4 divided doses. In therapy of the infected premature 10-15 mg./lb. oral tetracycline and 25 mg. streptomycin q. 6 h. may be given parenterally. Approximately 2,000 U. vitamin D and 10,000 U. vitamin A should be given each day to the premature infant at 2 weeks of age. In addition the premature needs vitamin C and the components of the vitamin B complex; 5 mg. vitamin K each day should be administered parenterally for the first 3 days of life.*

AMEBIASIS A FAMILY INFECTION - "Amebiasis is a familial disease, and multiple infections within the family are the rule rather than the exception," state Mackie and co-workers[5] in a report on intestinal parasitic infections in Forsyth County, N. C. "Sixty per cent of the families of infected school children had more than one infected person per family." Infected food handlers, the common house fly and general unsanitary or crowded households play highly significant roles in the transmission of infection. It is important also that infection can be received directly or indirectly by contact with contaminated objects.

BRAZIL: STREPTOMYCIN IN THERAPY OF VENEREAL CHANCROID - Twenty-eight patients with chancroid caused by Hemophilus ducreyi were successfully treated with dihydrostreptomycin. Cicatrization of lesions and "cure" were obtained within 6-18 days in all but 2 patients. These relapsed and cicatrization occurred within 25 and 31 days. Use of 1 Gm. dihydrostreptomycin per day for 4 days is recommended.[10]

GERMANY: PENICILLIN-DIHYDROSTREPTOMYCIN IN DIPHTHERIA - Treatment of 13 diphtheria patients with a combined penicillin-dihydrostreptomycin preparation‡ brought defervescence on the second day in 6 patients, on the third in 6 others. Over-all condition improved in all patients simultaneously with defervescence. Patients were also given serum. Eleven of 12 carriers also became negative after combined antibiotic treatment. Regimen: 400,000 units procaine penicillin, 100,000 units potassium penicillin, 0.5 Gm. dihydrostreptomycin daily for 7 days in patients, 9 days in carriers.[11]

## IN VIVO VERSUS IN VITRO SENSITIVITY

Speaking on the essential action of antimicrobial agents in vivo, Dr. Hobby[8] stated that "the two basic principles of antimicrobial therapy undoubtedly are" (1) the ability of the antimicrobial agent to exert "its growth inhibiting action in vivo against the specific microorganism concerned" and (2) the ability of the agent to reach the site of infection within the body and to remain there in sufficient concentration and for a sufficient period of time to permit it to exert its effects. "Bactericidal action in vivo may be essential to fully efficient antimicrobial therapy," Dr. Hobby stated, but "the failure of antimicrobial agents to sterilize in vivo has been observed repeatedly...and abundant evidence is available to indicate that failure to eradicate all infecting microbial cells within tissues or body fluids is a widespread phenomenon...." "Chemotherapy merely slows or halts multiplication of the infecting microorganisms, and...although highly effective in many situations, antimicrobial agents frequently fail to control certain infections, as for example those in which the organisms are located, either intracellularly or extracellularly, within areas of inflammation.... The limits of

*The antibiotic necessary to treat infection in the premature plus vitamins B, C, and K is available in Pfizer Tetracyn® SF† and Terramycin® SF.†

†Trademark for Pfizer-originated, vitamin-fortified antibiotics.

‡A penicillin-dihydrostreptomycin combination is available from Pfizer under the trademark Combiotic.®

chemotherapy are set by the amount of tissue destruction that has taken place before drug therapy is started, and by the sterilizing capacity of the drug or combination of drugs used.... These limits can be extended only by the defense mechanisms of the body, by surgical intervention, or perhaps by alteration of the nature of the lesion by means of hormones, enzymes, or other such substances."

"EXCELLENT" RESULTS WITH TERRA-CORTRIL®* IN DERMATOSES - When treated with Terra-Cortril applied locally q.i.d., 30 of 47 patients chiefly with atopic eczema (17) and contact dermatitis (20), with varying degrees of secondary infection, showed "rapid clearing of secondary infection" and at the same time a clinical "cure" of the primary dermatitis, reports Shapiro.[12] All other responses in this series were good. Terra-Cortril also gave similar results in another 53 patients with conditions in which "infection, or allergy thereto, may play an integral role." "The response of the majority of the cases of nummular eczema (15) and infectious eczematoid dermatitis (19) was particularly gratifying." Most cases of seborrheic dermatitis (12) included otitis externa, "which responded exceptionally well to the combined ointment." "No instances of irritation or sensitization to the ointment occurred" even though treatment lasted in some cases up to 6 months.

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## HORMONES

TOPICAL HYROCORTISONE IN ORAL CONDITIONS - A 1% hydrocortisone acetate ointment was found by Fisher[1] to be "acceptable and nonirritating" to most of 47 patients with certain oral conditions. These included leukoplakia, lichen planus, recurrent aphthae, "denture sore mouth," glossitis, glossodynia and cheilitis. The ointment was applied on a tongue depressor with a cotton tipped applicator and massaged into the lesions vigorously t.i.d. Good to excellent results were obtained in 19 subjects. In leukoplakia, for example, while ineffective against the "inactive" type, the ointment had a tendency to heal fissures, allay inflammation, and have a "leveling" effect on irritated or elevated patches which accompany the "active" type. The fact that 3 patients with "denture sore mouth," where symptomatic treatment had proved very unsatisfactory in the past, received some relief from the hydrocortisone ointment was considered "distinctly encouraging."

PREDNISONE RECOMMENDED FOR ADRENOCORTICAL HYPERPLASIA - Prednisone "may be the preparation of choice in treating patients with the adrenogenital syndrome or with ovulatory defects due to adrenocortical hyperplasia," feel Kupperman and associates,[2] because of the relatively low toxicity of prednisone and its reported

*Pfizer brand of Terramycin-hydrocortisone ointment.

lack of effect in inducing sodium retention. The recommendation is based on comparative evaluation of the new hormone, cortisone, hydrocortisone and 9-alpha-fluorohydrocortisone in 12 women with the adrenogenital syndrome.

TOPICAL HYDROCORTISONE NOT SYSTEMICALLY ABSORBED - There was no significant change in urinary 17-ketosteroid and 17-hydroxycorticosteroid excretion after 10 Gm. ointment containing 250 mg. hydrocortisone free alcohol was rubbed into human skin. Smith[3] demonstrated in 10 volunteers that "there was no absorption or there was insufficient absorption to alter these urinary steroids."

FRANCE: INTRASPINAL HYDROCORTISONE A POSSIBILITY FOR "LARGE-SCALE" USE - Hydrocortisone intraspinally appeared to be "remarkably effective against inflammatory meningeal blocks of tuberculous meningitis" and useful in the presence of high albumin concentrations in the cerebrospinal fluid, say Boudin and associates.[4] Three patients with tuberculous meningitis were given 10, 12 and 20 injections of 2-15 mg. each over periods of as long as 55 days. Meningeal blocks and high CSF protein "disappeared" after 4-5 injections. In 6 patients with multiple sclerosis given series of 10 injections, average of 10 mg. per injection given every other day, results were less definite but were considered worthy of further studies. On the basis of these findings intraspinal hydrocortisone administration "seems a valuable therapeutic method and seems to be usable on quite a large scale."

Jones and Barnett[5] report the use of epidural hyrocortisone instillations following operation on a lumbar intervertebral disc. The method was "helpful in controlling postoperative pain and in attaining earlier ambulation and rehabilitation of the patient." In the 50 patients treated with hydrocortisone there were no complications attributed solely to the use of the drug. After removal of the disc and control of bleeding, 25-50 mg. hydrocortisone were injected into the emptied interspace and suffused over the nerve root and the exposed dura. Healing of the wound has not been retarded in these patients.

GERMANY: TOPICAL HYDROCORTISONE MAY PREVENT SCARRING - A 2.5% hydrocortisone ointment produced results which seemed "promising and valuable" in preventing scarring in the surgical correction of phimosis. Haller[6] reports no interference with wound healing in 10 children treated with the ointment after or during the operation. [See note below.]

Note: Topical hydrocortisone available as Cortril® Topical Ointment, 1.0% (10 mg.) in 1/6 oz. tubes; and 2.5% (25 mg.) in 1/6 oz. tubes.

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## REDAKSIONEEL · EDITORIAL

### DADE WAT SPESIAAL BETREKKING HET OP DIE BEROEP VAN DIE MEDIESE PRAKTISYN

#### 'N Suid-Afrikaanse Probleem

Die onlangse beslissing van die Transvaalse Provinsiale Afdeling van die Hooggeregshof in die saak *R.* v. *Fritz** sit kort en bondig uiteen waaruit 'n daad wat spesiaal betrekking het op die beroep van 'n mediese praktisyn, bestaan, en bekragtig die beginsels neergelê in 'n vroeëre uitspraak (*R.* v. *Winberg*†) deur wyle regter van den Heever. Uittreksels uit albei uitsprake word elders in hierdie uitgawe gepubliseer. Die essensiële elemente is ondersoek, diagnose en behandeling van menslike kwale *vir wins*. As 'n ongeregistreerde persoon al hierdie dinge doen, maak hy hom skuldig aan 'n oortreding.

Die ondersoek en diagnose hoef nie van 'n mediese aard te wees nie. Dit hoef net ‚die een of ander soort ondersoek' te wees, byvoorbeeld deur in die oë te kyk, bloot die persoon te aanskou, of selfs met ‚X-straal-oë' na hom te kyk. Geen professionele instrument, soos 'n stetoskoop, hoef gebruik te word nie. Die ongeregistreerde praktisyn omseil nie die wet deur hokus-pokus of 'n abrakadabra-geprewel nie. Die onwetenskaplike aard van sy diagnose

### ACTS SPECIALLY PERTAINING TO THE CALLING OF A MEDICAL PRACTITIONER

#### A South African Problem

The recent decision in the Transvaal Provincial Division of the Supreme Court in the matter of R. *v.* Fritz* sets out succinctly what constitutes an act specially pertaining to the calling of a medical practitioner, and affirms the principles laid down in an earlier judgment (R. *v.* Winberg†) by the late Mr. Justice van den Heever. Extracts from both judgments are published elsewhere in this issue. The essential elments comprise examination, diagnosis and treatment of human illness *for reward*. If an unregistered person does all these things, he is guilty of an offence.

The examination and diagnosis need not be medical in character. It need only be 'some kind of examination', e.g. looking into the eyes of the patient, merely looking at his person or even looking at him with 'X-ray eyes'. No professional instrument, e.g. a stethoscope, need be used. The unregistered practitioner does not circumvent the law by employing any hocus-pocus or abracadabral mutterings. The unscientific nature of his diagnosis will not avail to excuse him. It is the act, not the

* 1954 [I] S.A. 270.
† 1941 O.P.D. 137.


* 1954 [I] S.A. 270.
† 1941 O.P.D. 137.

kan nie as verskoning aangevoer word nie. Dit is die daad—en nie die manier waarop die diagnose uitgevoer word nie—wat van belang is. Die howe het reeds baie duidelik verklaar dat die Wet op Geneeshere, Tandartse en Aptekers die nodige masjinerie verskaf om kwaksalwery die hoof te bied.

In die gevalle wat oorweeg is in *R.* v. *Fritz* het die behandeling bestaan uit die verskaffing van die een of ander soort medisyne. Dit is 'n redelike gevolgtrekking dat die behandeling nie noodwendig uit geneesmiddels hoef te bestaan nie. Mediese praktisyns skryf nie altyd geneesmiddels voor nie. Hulle maak miskien staat op psigoterapeutiese maatreëls, òf heeltemal alleen, òf tesaam met geneesmiddels. Hoewel die punt nie spesifiek oorweeg is nie, is dit moontlik dat, mits die een of ander soort behandeling op die een of ander soort diagnose volg, dit 'n onderdeel word van 'n daad wat spesiaal betrekking op die mediese professie het.

Dit skyn ook duidelik te wees dat as die diagnose en behandeling sonder wins geskied, dit geen oortreding is nie. 'n Leek wat 'n siekte diagnoseer, of raad daaroor gee, of 'n middel daarvoor voorskryf, maak hom nie hierdeur noodwendig aan 'n wetsoortreding skuldig nie. Trouens, dit is iets wat dikwels tussen bure en vriende gebeur. Die aanneming van betaling vir behandeling sonder voorafgaande diagnose is ook nie 'n oortreding nie. Aptekers en algemene handelaars is geregtig om medisyne te verkoop, maar hulle verkoop bloot 'n artikel waarom die kliënt gevra het. Uit 'n verskeidenheid van geneesmiddels wat geskik is vir die kwaal soos deur die kliënt self gediagnoseer, kan hulle 'n keuse en 'n aanbeveling doen. Hulle diagnoseer egter nie vir wins nie, en is ook nie geregtig om dit te doen nie. Op dieselfde wyse kan psigoloë die psigoterapie wat deur 'n geregistreerde mediese praktisyn voorgeskryf is, vir wins toepas; 'n fisioterapeut is dan ook heeltemal geregtig om betaling aan te neem vir die fisioterapeutiese behandeling wat deur 'n geneesheer voorgeskryf is.

Wanneer 'n leek egter ondersoek, diagnoseer en behandel met die doel om wins te maak, doen hy hierdie dinge (en dit maak nie saak hoe belaglik hy te werk gaan nie) op die manier waarop hulle deur 'n dokter gedoen word, d.w.s. ‚as 'n besigheidsaak en vir wins', en dan maak hy hom skuldig aan 'n statutêre oortreding.

Hierdie sienswyse oor die betekenis van 'n mediese daad het interessante reperkussies op die bedrywighede van nie-mediese praktisyns

manner, of diagnosis that is relevant. The Courts have clearly indicated that the Medical, Dental and Pharmacy Act provides an adequate mechanism for dealing with quackery.

In the instances considered in R. *v.* Fritz, treatment consisted in the provision of some kind of medicine. It is a reasonable inference that the treatment need not consist of drugs. Medical practitioners do not always prescribe drugs. They may rely on psychotherapeutic measures, either alone or in combination with drugs. Although the point was not specifically considered, it may now well be that provided treatment of a kind follows diagnosis of a kind, it becomes an ingredient of an act specially pertaining to the medical profession.

It also seems clear that when diagnosis and treatment are done without gain, no offence is committed. A layman who diagnoses or advises or prescribes for an illness is not necessarily on that account guilty of an infringement. Indeed, this is a common enough situation among friends and neighbours; nor would the acceptance of payment for a treatment without prior diagnosis constitute an offence. Chemists and general dealers are entitled to sell medicines, but they are merely selling a commodity the customer asks for. They may select and recommend from a variety of medicines suitable for the complaint as diagnosed by the customer; they do not and are not entitled to diagnose for reward. In the same way, psychologists may carry out for gain psychotherapy prescribed by a registered medical practitioner and physiotherapists may lawfully accept payment for dispensing physiotherapy prescribed by a doctor.

When, however, examination, diagnosis and treatment are practised by a lay person for reward, he is doing these things (no matter how absurdly) after the fashion of a doctor, i.e. 'as a matter of business and for gain', and he would be guilty of a statutory offence.

This view of what constitutes a medical act has interesting repercussions on the activities of non-medical practitioners who diagnose and treat human illness for gain.

The problem arises in connection with psychologists not medically qualified who diagnose and treat human illness professionally. It is unlikely that the judgment in R. *v.* Fritz can be construed to exclude mental or emotional disorders from the category of human illness, the diagnosis and treatment of which are within the province of the medical practitioner. But

wat menslike kwale vir wins diagnoseer en behandel.

Die probleem ontstaan in verband met psigoloë wat nie medies gekwalifiseer is om menslike kwale professioneel te diagnoseer en behandel nie. Dit is onwaarskynlik dat die uitspraak in die saak *R.* v. *Fritz* op so 'n manier vertolk kan word dat dit geestelike of emosionele versteurings uitsluit uit die lys van menslike kwale, die diagnose en behandeling waarvan binne die bestek van die mediese praktisyn val. Maar aangesien die behoorlike behandeling van die psigoneuroses en van sulke psigosomatiese probleme soos asma, hooikoors en bednatmaak, onafskeidelik aan diagnostiese prosedures verbonde is, skyn dit *prima facie* asof 'n nie-mediese psigoloog wat menslike pasiënte vir wins behandel, hom aan 'n wetsoortreding skuldig maak.

Aan die ander kant en om geskiedkundige redes laat die wet sekere persone wat nie medies gekwalifiseer is nie toe om te diagnoseer en behandel vir wins in sekere beperkte sfere, bv. tandartse en vroedvroue. 'n Interessante probleem word te berde gebring in die geval van 'n voetkundige wat (as hy liddorings verwyder) miskien tegnies 'n mediese daad verrig. Alhoewel hy geen statutêre verlof het om so iets vir wins te doen nie, sou enige vervolging wat teen hom ingestel word oor die algemeen as belaglik beskou word; maar hy maak hom skuldig aan 'n oortreding as hy die grense van sulke eenvoudige operasies soos die verwydering van liddorings oorskry (*R.* v. *Winberg,* 1941 O.P.D. 137).

Hierdie voorbeelde bewys hoe die reg om te diagnoseer en te behandel vir wins op 'n beperkte wyse oorgegee of afgestaan is (kragtens wet of volgens gewoonte) aan persone wat nie geneeskundig gekwalifiseer is nie, maar tog bevoeg is om sekere dinge te doen. In sommige opsigte skyn dit asof daar 'n proses van abrogasie was wat 'n mens nogal sterk herinner aan die veranderings in die wet met betrekking tot owerspel. Omdat daar gedurende 'n tydperk van meer as 100 jaar geen vervolgings teen owerspeliges ingestel is nie, het ons howe ongeveer 40 jaar gelede besluit dat owerspel nie langer 'n kriminele oortreding is nie. Hierdie beslissing was die uiterlike teken van 'n stadige en listige sosiale revolusie wat waarskynlik die veranderende sekulêre sedes van ons gemeenskap weerspieël. Het 'n analoë professionele revolusie plaasgevind wat betref die reg om sekere geesteskwale vir wins te diagnoseer en behandel, sodat (hoewel hulle mediese dade is) hulle nie langer die eksklusiewe prerogatief van die mediese professie is since the proper treatment of the psychoneuroses and of such psychosomatic problems as asthma, hay fever and bed-wetting is inseparably bound up with diagnostic procedures, it would appear, *prima facie,* that a non-medical psychologist who practises on human patients for gain, is acting unlawfully.

On the other hand, for historical reasons, the law allows certain persons, not medically qualified, to diagnose and treat for gain in certain limited fields, e.g. dentists and midwives. An interesting issue is raised in the case of the chiropodist, who (when he removes corns) may technically be performing a medical act. Although he has no statutory permission to do so for gain, a prosecution against him would generally be regarded as absurd; but he would be guilty of an offence if he went beyond such simple acts as the removal of corns (R. *v.* Winberg, 1941 O.P.D. 137).

These examples illustrate how, in a circumscribed way, the right to diagnose and treat for gain has been surrendered or abandoned (by statute or by custom) to persons not medically qualified, yet competent to do these things. In some ways there seems to have been a process of abrogation, reminiscent of the change in the law relating to adultery. Because there had been no prosecution for over 100 years of the crime of adultery, our Courts held some 40 years ago that adultery was no longer criminal. This decision reflected a slow and insidious social revolution probably mirroring the changing secular mores of our society. Has an analagous professional revolution taken place in the right to diagnose and treat certain mental illnesses for gain, so that (though these are medical acts) they are no longer the exclusive prerogative of the medical profession? This does not mean, of course, that we as a profession have surrendered the whole field of treatment, e.g. of the psychoneuroses. Sub-coma insulin therapy, to take but one example, remains clearly and exclusively medical; but there may well now be a socially acceptable and approved para-medical field of diagnostic and therapeutic endeavour in the terrain of the disturbed psyche, which lawfully admits other than registered medical practitioners. The boundaries which delimit such areas of practice may on occasion be blurred. Indeed, it may well need the Courts to interpret the present legal position, if it is challenged in the absence of legislation

nie? Dit beteken natuurlik nie dat ons, as beroep, die hele behandelingsbestek van, byvoorbeeld, die psigoneuroses gewonne gegee het nie. Sub-koma-insulienterapie, om net een voorbeeld te noem, bly duidelik en eksklusief medies; maar dit is bes moontlik dat daar teen hierdie tyd 'n sosiaal-aanneemlike en goedgekeurde para-mediese gebied van diagnostiese en terapeutiese arbeid op die terrein van die versteurde psige is waar ander persone, en nie net geregistreerde mediese praktisyns nie, wettiglik toegelaat word. Die grense wat hierdie gebied afbaken kan by wyle baie newelagtig wees. Trouens, by ontstentenis aan wetgewing wat spesiaal aangeneem is om die posisie te verduidelik, sal dit miskien vir die howe nodig wees om die huidige regsposisie te vertolk as dit uitgedaag word. Maar versuim om die saak aanhangig te maak, sal noodwendig aanleiding gee (as dit nie reeds aanleiding gegee het nie) tot die erkenning deur die gemeenskap, die staat en die mediese professie dat ons afstand gedoen het van ons eksklusiewe regte in sekere beperkte gebiede van die mediese praktyk.

As daar geredeneer of volgehou word dat dokters nie afstand gedoen het van hul eksklusiewe wettige reg om alle geesteskwale te behandel nie, word dit belangrik om oorweging te verleen aan die gevolge van die daarstelling van registers vir mediese adjunkte. Die feit dat die Mediese Raad 'n *vrywillige* register vir psigoloë ingestel het, los nie die dilemma op van die nie-mediese psigoloog, as die uitspraak in die saak van *R.* v. *Fritz* ook op die psigologiese praktyk van toepassing is nie. Vrywillige registrasie beteken bloot die self-oplegging van sekere etiese en ander professionele beperkings. Dit maak nie iets wat onwettig is wettig nie.

Maar as verpligte registrasie van ‚kliniese psigoloë' ingestel word kragtens die bevoegdhede van die Mediese Raad, sal 'n nuwe klas geneeshere van 'n sekere soort byna oornag geskep word. Hierdie psigoloë (wat verplig sal word om hulle te laat registreer as die een of ander soort adjunkte tot die mediese diens) maar wat slegs pasiënte sal kan spreek wat deur 'n mediese praktisyn na hulle verwys word, sal inderdaad 'n heeltemal nuwe soort mediese dier wees. Hulle sal spesialiste wees wat hulself begrens en beperk binne die omtrekke van hul spesialiteit, maar hulle sal ook 'n soort konsulterende geneesheer wees omdat hulle alleen persone wat deur geregistreerde praktisyns na hulle verwys word, sal spreek. Daar kan geredeneer word dat die skepping van so 'n soort spesialis-konsultartsdokter eintlik oorbodig is omdat daar binne die

specially enacted to clarify the situation. But failure to test the issue must lead (if it has not already led) to the recognition by Society, the State and the medical profession that we have abandoned exclusive title to a certain limited field of medical practice.

If it is argued or held that doctors have not abandoned their exclusive legal right to treat all mental illness, it becomes important to explore the consequences of creating registers for medical auxiliaries. The fact that the Medical Council has established a *voluntary* register for psychologists provides no escape from the dilemma which faces non-medical psychologists, if the judgment of R. *v.* Fritz applies to psychological practice. Voluntary registration merely means the self-imposition of certain ethical and other professional restrictions. It does not make lawful what is unlawful. But if compulsory registration of 'clinical psychologists' were established under the powers of the Medical Council, a new class of a doctor of a kind would be created overnight. These psychologists (compulsorily registered in the form of some auxiliary class of medical service), able to see only patients referred to by them by medical practitioners, would, in fact, be a completely new kind of medical animal. They would be specialists who confined and restricted themselves within the boundaries of their speciality and they would also be consultants of a kind because they would be seeing only cases referred to them by registered practitioners. It could be argued (from the profession's point of view) that nothing would be more superfluous than the creation of this specialist-consultant-doctor-of-a-kind, since there are, within the medical profession, psychiatrists specially trained to deal with such mental and emotional disorders as some practitioners may find beyond their competence, or prefer not to treat.

The registration of medical auxiliaries, of the type outlined, would make psychological practice lawful under the umbrella of an Auxiliaries Register. It would, at the same time, create (in the opinion of a large section of the medical profession) a wholly unnecessary class of persons who have not gone through the discipline of a medical training, but who will be permitted by law to do acts specially pertaining to the calling of a medical practitioner. We are, of course, not concerned

mediese professie psigiaters is wat spesiaal opgelei is vir die behandeling van die geestes- en emosionele versteurings wat bo die vuurmaakplek van sommige mediese praktisyns is, of wat hulle om die een of ander rede verkies om nie te behandel nie.

Die registrasie van mediese adjunkte van die tipe wat hierbo beskryf is, sal 'n psigologiese praktyk onder die sambreel van 'n Adjunkteregistreer wettig maak. Volgens die mening van 'n baie groot seksie van die mediese professie sal dit terseldertyd 'n heeltemal onnodige klas persone skep wat hulle nie aan die dissipline van 'n mediese opleiding onderwerp het nie, maar wat kragtens wet toegelaat sal word om dinge te doen wat spesiaal op die beroep van 'n mediese praktisyn betrekking het. Ons is natuurlik nie begaan oor die soort ondersoekingswerk wat deur psigometriste gedoen word nie, bv. die vaststelling van intelligensie, of geskiktheidstoetse, of industriële psigologie. Al hierdie dinge val binne die bestek van die psigoloë wat vir wins praktiseer sonder om die bepalings van die Wet op Geneeshere, Tandartse en Aptekers te oortree.

'n Ewe interessante probleem word te berde gebring deur die beoefenaars van die chiropraktyk, 'n opvatting van siekte wat nie gebaseer is op die wetenskaplike metodes soos mediese praktisyns dit verstaan nie. In soverre chiropraktisyns versteurings van die menslike geraamte vir wins ondersoek, diagnoseer en behandel, skyn dit asof hulle dade verrig wat spesiaal betrekking op die beroep van die mediese professie het. Trouens, die feit dat vervolgings gedurende die afgelope paar jaar teen chiropraktisyns ingestel is, dui miskien daarop dat hulle bes moontlik die bepalings in verband met die mediese praktyk, soos uiteengesit in *R.* v. *Fritz*, oortree. (Dit is betekenisvol dat geen praktiserende psigoloog tot dusver vervolg is nie). Die regsposisie van die chiropraktisyns is miskien nie so obskuur soos dié van die psigoloog nie. Bes moontlik het ons nog nie so duidelik afstand gedoen van die gebied waarin die chiropraktisyn die reg opeis om te praktiseer nie.

Die uitsprake in die sake waarna hierbo verwys is, verduidelik watter dade in besonder binne die bestek van die mediese professie val. Tegelykertyd het hierdie uitsprake ander belangrike probleme te berde gebring rakende diegene wat miskien vir wins diagnoseer en behandel. Die mediese professie sal hierdie probleme betyds en baie sorgvuldig in oënskou moet neem, onder meer uit die standpunt van die inbreuk wat daar dadelik of in die toekoms op die wettige praktyk van die geneesheer gemaak kan word.

Met die oog op die huidige besorgdheid oor die instelling van 'n register vir mediese adjunkte,* moet ons (as mediese professie) good nadink oor die volle omvang waarin ons bes moontlik afstand doen van sommige van ons professionele funksies. Sal ons, met die totstandkoming van die Register vir Mediese Adjunkte, oorgaan van moontlike abrogasie tot doelbewuste abdikasie van sommige van ons tradisionele regte en prerogatiewe?

* In die troonrede by geleentheid van die opening van die Parlement op 13 Januarie 1956 het Sy Eksellensie die Goewerneur-generaal gesê dat daar voorgestel word om voort te gaan met die Wetsontwerp vir die Beheer van Aanvullende Gesondheidsdienste. Die wetsontwerp is tydens die vorige sitting na 'n Gekose Komitee verwys.

with the type of investigation done by psychometrists, e.g. the measurement of intelligence, or aptitude testing, or industrial psychology, which would all fall properly within the scope of psychologists practising for gain without contravening the Medical, Dental and Pharmacy Act.

An equally interesting problem is posed by exponents of chiropractic, a concept of disease which is not based on the scientific method as medical practitioners understand it. In so far as chiropractors examine, diagnose and treat disorders of the human frame for gain, they would appear to be performing acts specially pertaining to the calling of the medical profession. Indeed, the fact that in recent years prosecutions against chiropractors have been instituted may indicate that they possibly contravene the provisions relating to medical practice as indicated in R. *v.* Fritz. (It is significant that no charge has as yet been preferred against a practising psychologist). The legal position of the chiropractor may not be as obscure as that of the psychologist. We may not yet so clearly have surrendered the territory in which chiropractors claim the right to practise.

The judgments in the cases referred to have clarified what acts are peculiarly within the province of the medical profession. They have, at the same time, raised other important problems affecting who may diagnose and treat for gain. These problems the medical profession needs to review very carefully, and timeously, *inter alia* from the standpoint of immediate or ultimate inroads upon legitimate medical practice.

In view of the current concern about the establishment of registers for medical auxiliaries*, we (as a medical profession) must think out clearly the full extent to which we may be surrendering some of our professional functions. Will we, with the establishment of a Medical Auxiliaries Register, be proceeding from possible abrogation to deliberate abdication of some of our traditional and legal rights and prerogatives?

* In the Speech from the Throne at the Opening of Parliament on 13 January 1956, His Excellency the Governor-General intimated that it was proposed to proceed with the Bill to Control Supplementary Health Services. This Bill had been referred to a Select Committee during the previous session.

## DIE PROGRAM T.O.V. SEREBRALE VERLAMMING IN SUID-AFRIKA

Die Nasionale Raad vir die Versorging van Kreupeles in Suid-Afrika het 'n 10-ledige program van aksie aangekondig wat onder meer voorsiening vir die volgende maak:

1. Koördinasie van die werk van alle liggame (amptelik sowel as vrywillig) wat hulle beywer om die lotgevalle van die slagoffers van serebrale verlamming te verbeter.

2. Hulpverlening aan plaaslike gemeenskappe in die Unie en Suidwes-Afrika wat skole, klinieke, diagnose- en behandelingsentrums, ens., wil oprig.

3. Die opvoeding van die publiek wat betrel die aard van serebrale verlamming en die doeltreffendste manier om hierdie ernstige probleem die hoof te bied. In die naaste toekoms sal daar oorgegaan word tot die publikasie van 'n geskikte tydskrif en die oprigting van 'n bibliioteek, en die steun van mediese, opvoedkundige en ander organisasies sal verkry word.

4. Die versorging en behandeling van diegene wat as nie-opvoedbaar beskou word, en die daarstelling van 'n erkende maatstaf van opvoedbaarheid.

5. Die opleiding van geneeshere, onderwysers, terapeute en ander personeellede wat nodig is vir die uitbreiding van behandelings- en opvoedkundige fasiliteite.

6. Die ontwikkeling van die werk wat reeds gedoen is in verband met die samestelling van 'n nasionale register van alle slagoffers van serebrale verlamming in Suid-Afrika.

7. Spesiale aandag aan die behoeftes van die nie-blanke slagoffers van serebrale verlamming.

8. Kliniese en opvoedkundige navorsing na die oorsake en behandelingsmetodes van serebrale verlamming, met besondere nadruk op voorkomingsmaatreëls en vroeë diagnose.

9. Die oprigting van hostels in die groot sentrums om die behandeling en opvoeding van plattelandse kinders te vergemaklik.

10. Werkverskaffing of beskutte werkverskaffing aan diegene wat in staat is om te werk. Oorweging sal verleen word aan die oprigting van 'n permanente tehuis vir diegene wat aan baie ernstige vorms van die siekte ly, en volle steun sal toegesê word aan die oprigting van 'n vakansietehuis in Natal.

Mediese praktisyns wat nadere inligting oor die werk van die Nasionale Raad vir die Versorging van Kreupeles in Suid-Afrika verlang, moet in verbinding tree met die sekretaris (mnr. I. J. J. van Rooyen), Posbus 10173, Johannesburg. (*Telefone*: 23-5496 of 23-5697).

## THE CEREBRAL PALSY PROGRAMME IN SOUTH AFRICA

The National Council for the Care of Cripples in South Africa has released a 10-point Programme of Action which includes the following principles:

1. Co-ordination of the activities of all Bodies (official and voluntary) working to improve the lot of the cerebral palsied.

2. Assistance to local communities in the Union and South West Africa for the establishment of schools, clinics, diagnostic and treatment centres, etc.

3. Education of the public about the nature of cerebral palsy and the most effective way of dealing with this grave problem. The establishment of an appropriate journal, and library, together with support from medical, educational and other agencies, will be undertaken in the near future.

4. Care and treatment of those regarded as ineducable with the establishment of a recognized standard of educability.

5. The training of doctors, teachers, therapists and other personnel essential for the extension of treatment and educational facilities.

6. The development of the work already begun in the compilation of a national register of all cerebral palsied persons in South Africa.

7. Special attention to the requirements of non-European victims of cerebral palsy.

8. Clinical and educational research into the causes and methods of treatment of cerebral palsy with particular emphasis on prevention and early diagnosis.

9. The establishment of hostels in large centres to facilitate treatment and education of children from rural areas.

10. Employment or sheltered employment for those able to do some kind of work, with the consideration of establishing a permanent home for the very severely handicapped, and full support for the establishment of a Holiday Home in Natal.

Medical practitioners who wish to obtain further information about the work of the National Council for the Care of Cripples in South Africa should communicate with: The Secretary (Mr. I. J. J. van Rooyen), P.O. Box 10173, Johannesburg. (*Telephones*: 23-5496 or 23-5697).

## ANOTHER MINISTRY BLUNDER

*[Under the foregoing title the following text was published as an Editorial in the* British Medical Journal *on 28 January 1956, at p. 220. We reprint it here by authority of the Editor of the* British Medical Journal. *South African comment is redundant.—Editor.]*

'We print elsewhere in this issue details of the Ministry of Health's scheme to make available through local authorities a limited supply of poliomyelitis vaccine for the inoculation of children born between 1947 and 1954. By a fortunate coincidence we published a leading article on poliomyelitis vaccine in last week's *Journal* at the time of the Ministry's announcement. But we were most unfortunately kept completely ignorant of the details of the Ministry of Health's scheme, and so were not in a position to give them to our readers. For this regrettable omission we must apologize on behalf of the Ministry of Health because we fear they are unlikely to do so themselves. It is deplorable that the Ministry of Health should fail to give the facts on a matter of such importance as vaccination against poliomyelitis to the medical press to enable it to report them, with informed comment, to the medical profession at least at the same time as the national newspapers report them to the public. The interview given by the Ministry to the press last week was conducted in a glare of lights and to the tune of television cameras, with the Minister of Health and his officials bashfully basking in the presence of such welcome publicity. The whole thing seems to have been a tame imitation of the unfortunate performance on the introduction of the Salk vaccine in the U.S.A. But at least when Americans go in for publicity they do it with expertise.

For many years now we have recurrently asked the Ministry of Health officials to keep in mind the simple fact that medical matters are quite likely to be of interest to medical men, and to see that the medical press is kept at least as well informed as the lay press. In one reply to a protest from the *Journal* some years ago a Ministry official wrote: "We shall certainly continue to try to tip you off about important reports or other official statements which may be in the offing. Quite frankly, it is usually a question of whether, in the heat and bustle of the moment, one can remember —or has the time—to do so." We were invited to let the Ministry know in the future when "we have overlooked your special interests". We now do so, but publicly, as private protests have been without effect.

The Ministry circular on "Poliomyelitis Vaccine" is addressed to county councils and county borough councils, with copies to medical officers of health. The only technical information thus given at second hand to medical officers of health, and thus at third hand to the profession generally, is that "the vaccine manufactured in this country is a Salk-type vaccine". There is no information on the strains being used. Reference to "*the* vaccine" is quite misleading because there are differences in the vaccines manufactured by the two firms responsible for their production. There is no information on the culture medium used. There is no mention of the presence in the vaccine of small amounts of penicillin and streptomycin. It is little short of scandalous that the Ministry of Health should hand out material in this cavalier way to those who have to inject it. They are treating medical officers of health as not much more than mechanics at one end of a syringe. Bacteriologists want to know—but are not informed—just in what respects the two British vaccines differ from the Salk vaccine—what strains of virus are being used; what tissue the viruses are grown on (? monkey kidney); what process is used to inactivate the virus and whether antibiotics from the tissue-culture medium are present in the vaccine. It is most important, too, that general practitioners should know what the children under their care are receiving. Even though a sensitivity reaction to penicillin may be most unlikely, the general practitioner will at least be on his guard if he knows that his young patient has received some in the vaccine. It is disgraceful that this information has not been given. At the time of going to press we managed to secure some details of the vaccines (see p. 225). We know that recent American and Canadian experience is highly reassuring; we know that most stringent precautions are being taken; we know that the Ministry has had expert guidance and advice and that the manufacture of the vaccine is in thoroughly trustworthy hands —but it is impossible to excuse this latest example of ministerial ineptitude. The medical profession wants from the Ministry of Health not a propaganda sheet but facts.'

# THE RELATIONSHIP BETWEEN HYPERTENSION AND FATAL MYOCARDIAL INFARCTION

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The frequency of the association of hypertension and myocardial infarction is still largely undetermined, and data based on autopsies are especially scanty. The use of post-mortem material in which clinical information is also available permits of a more precise evaluation of hypertension and myocardial infarction, and of the state of the coronary vessels.

## MATERIAL STUDIED

This study is an analysis of 113 cases of myocardial infarction, coronary insufficiency, myomalacia cordis and cardiac aneurysm which have been autopsied in this Department over the 6-year period January 1948 to December 1953. These cases all show one feature in common, viz. myocardial ischaemia, which may have occurred acutely to precipitate infarction or over a period of time resulting in fibrosis, the latter being recognized as ischaemic in origin by characteristic gross and microscopic appearances. In only a small proportion of cases could thrombi definitely be demonstrated, but all showed evidence of coronary artery disease with reduction in the size of the vessel lumen. Cases of hypertensive cardiac failure unassociated with myocardial infarction have not been included.

In evaluating whether a case is hypertensive or not the following criteria have been taken into account:

(*a*) The clinical findings including blood pressure readings;
(*b*) Gross description of the heart;
(*c*) Weight of the heart;
(*d*) Left ventricular thickness.

According to the literature the accepted range of what constitutes normal blood pressure varies tremendously, the level being affected by various factors amongst which age is perhaps the most significant. From Table I it may be seen that the normal upper limit extends from 140/90 to 190/110 mm. of Hg. For the purposes of this paper the upper limit of normal is accepted as a systolic pressure of 160 mm. and a diastolic pressure of 100 mm. of Hg. This value may be higher than that defined by some investigators; but as myocardial infarction is more prevalent in the older age groups, it will include any case irrespective of age.

TABLE I: HYPERTENSIVE BLOOD PRESSURE LEVELS AS DEFINED FROM THE LITERATURE

| *Author* | *Upper Limit of Blood Pressure in mm. Hg.* |
|---|---|
| Levine[1] .. .. .. | 160/100 |
| White and Bland[2] .. | 160/110 |
| Palmer[3] .. .. .. | 160/100 |
| Master *et al.*[4] .. .. | 150/90 |
| Rosenbaum and Levine[5] | 150/100 |
| Rathe[6] .. .. .. | 140/90 |
| Goldring and Chasis[7] .. | 150/90 |
| Evans[8] .. .. .. | 180/110 |
| Wood[9] .. .. .. | 150/90 |
| Master *et al.*[10] .. .. | 150/90. After 60 190/110 |
| White[11] .. .. .. | 150/90 |
| Sigler[12] .. .. .. | 140/90 |
| Bean[13] .. .. .. | 160/100 |

It is known that the normal heart weight is influenced not only by the sex but also by the body weight, height and age of the subject.[14, 15] In this investigation 280 g. is accepted as constituting the upper limit of normal for the average woman and 320 g. for the average man. Similarly, a left ventricular thickness (measured midway between the aortic cusps and the apex, excluding the papillary muscles) of 15 mm. is regarded as the average upper limit of normal.[16]

While a heart weight and left ventricular thickness in excess of these limits are regarded as indicating hypertrophy, it must be stated that in this series the majority were far above these values. Despite the assertion of Harrison and Wood[17] that myocardial infarction in itself may produce hypertrophy of the heart, we feel that hypertrophy, when unassociated with any other significant lesion, constitutes one of the most valuable criteria in the post-mortem diagnosis of hypertension.

Thus these 4 criteria if present together in any one case (in the absence of any other significant myocardial, valvular or pericardial

lesion) are accepted as indicating the presence of hypertensive disease. The exceptional case with high blood pressure readings but without macroscopic evidence of left ventricular hypertrophy has been rejected; and the case with the typical gross findings in the absence of persistently high blood pressure recordings has been accepted only provisionally and separately grouped.

## OBSERVATIONS

Of the 113 cases included in this survey, 68 are male and 45 female. In Table II it may be seen that these cases consist of:

i. Eighty-three Europeans of which 51 are males and 32 females;
ii. Twenty-nine Coloureds of which 17 are males and 12 females;
iii. One Bantu female.

TABLE II: THE AGE AND SEX DISTRIBUTION IN THE RACIAL GROUPS OF ALL CASES OF CORONARY INSUFFICIENCY

| *Age Group (Years)* | *European* | | *Coloured* | | *Bantu* | | *Total* | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *F* | *M* | *F* | *M* | *F* | *M* | *F* |
| 0—9 .. | — | — | — | — | — | — | — | — |
| 10—19 .. | — | — | — | — | — | — | — | — |
| 20—29 .. | 2 | — | 1 | — | — | — | 3 | — |
| 30—39 .. | 2 | — | 2 | 1 | — | — | 4 | 1 |
| 40—49 .. | 9 | 2 | 4 | 5 | — | — | 13 | 7 |
| 50—59 .. | 8 | 7 | 5 | 3 | — | 1 | 13 | 11 |
| 60—69 .. | 16 | 14 | 3 | 3 | — | — | 19 | 17 |
| 70—79 .. | 10 | 8 | 2 | — | — | — | 12 | 8 |
| 80+ .. | 3 | 1 | — | — | — | — | 3 | 1 |
| Unknown | 1 | — | — | — | — | — | 1 | — |

M = Male; F = Female.

The peak incidence for the total series falls in the age group 60-69 years, and over 80% died between the ages of 40 and 79 years (Table II). Amongst the Europeans the peak incidence again falls in the age group 60-69 years, and 89% of cases died between the ages of 40 and 79 years. The Coloureds, constituting a small group, show peak incidences in the age groups 40-49 years and 50-59 years; 89% died between 40 and 69 years and 60.8% between 40 and 59 years. The Solitary Bantu case was 50 years old.

In the entire series males preponderate over females, but in the age group which shows the peak incidence (60-69 years) the sexes closely approximate one another. It is difficult to attach any significance to this finding as the figures are too small and the sex distribution in the various age groups of the total number of cases coming to autopsy is not known.

Based on the criteria already outlined, these cases could be classified as:

i. Hypertensive where all the findings are positive;
ii. Non-hypertensive where none of the findings is positive; and
iii. An equivocal group in which the majority but not all the findings are positive.

An attempt has been made to further subdivide the last group into probable hypertensives, probable non-hypertensives and those of unknown classification. The findings are as follows:

1. Seventy-five cases (66%) are definitely hypertensive.
2. Nine cases (8%) are definitely not hypertensive.
3. Twenty-nine cases (25%) show equivocal findings.

In the latter group there are 16 cases who were probably hypertensive, 4 who were probably not hypertensive and 9 where no decision on the data available is possible.

The final assessment is thus:

1. Ninety-one (80%) cases show evidence of hypertension.
2. Thirteen (12%) cases show no evidence of hypertension.
3. Nine (8%) cases in whom the data were inadequate.

The hypertensive cases irrespective of racial grouping show a peak incidence in the age group 60-69 years (Table III).

TABLE III: THE AGE AND SEX DISTRIBUTION IN THE RACIAL GROUPS OF THE HYPERTENSIVE CASES WITH CORONARY INSUFFICIENCY

| *Age Group (Years)* | *European* | | *Coloured* | | *Bantu* | | *Total* | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *F* | *M* | *F* | *M* | *F* | *M* | *F* |
| 0—9 .. | — | — | — | — | — | — | — | — |
| 10—19 .. | — | — | — | — | — | — | — | — |
| 20—29 .. | 1 | — | — | — | — | — | 1 | — |
| 30—39 .. | — | — | — | — | — | — | — | — |
| 40—49 .. | 5 | 2 | 2 | 4 | — | — | 7 | 6 |
| 50—59 .. | 7 | 4 | 4 | 2 | — | 1 | 11 | 7 |
| 60—69 .. | 13 | 8 | 1 | 2 | — | — | 14 | 10 |
| 70—79 .. | 8 | 4 | 2 | — | — | — | 10 | 4 |
| 80+ .. | 3 | 1 | — | — | — | — | 3 | 1 |
| Unknown | 1 | — | — | — | — | — | 1 | — |

M = Male; F = Female.

## DISCUSSION

The association between hypertension and atheroma has received much prominence lately, and from this two questions arise:

i. To what extent does the presence of hypertension contribute to the development of atheroma; and

ii. To what extent is it responsible for, or does it contribute to, the commonest complication of degenerative vascular disease, i.e. myocardial infarction and coronary insufficiency.

To supply information on the first query is beyond the scope of this investigation. In relation to this an autopsy analysis meets a serious obstacle in the attempt to assess the degree of atheroma, and to define differences on this basis alone. It is felt that the experimental field would be more satisfactory for the elucidation of such a question. The second question, however, as it is associated with definite morphological alterations, is much better suited to the investigation of clinical and post-mortem material.

Where previous investigations of the relationship between hypertension and myocardial infarction have been reported in the literature (Table IV) and based on clinical analysed 300 cases from the protocols of 9,625 consecutive autopsies. He concluded that approximately 50% of his cases had an elevated blood pressure, the peak incidence was in the seventh decade and the average age of onset was 61 years.

Our findings (based on clinical, gross and microscopic records) are in accord with those of others and confirm that unequivocal evidence of hypertension is present in 66% of cases; and that there is good reason to suspect that this incidence may be even higher, approaching the figure of 80%. When autopsy data are added to the clinical assessment, the results obtained must be of greater significance than from clinical studies alone, particularly where in many instances blood pressure recordings are noted in the patient for the first time only after myocardial infarction has occurred. The criteria for the diagnosis of hypertension in an ambulant patient before infarction, which consists of

TABLE IV: THE INCIDENCE OF HYPERTENSION IN CLINICAL MYOCARDIAL INFARCTION

| *Author* | *Total Number of Cases* | *Male* | *Female* | *Percentage Hypertensive* | *Age Incidence* |
|---|---|---|---|---|---|
| Levine[1] .. .. .. .. | 145 | 111 | 34 | 40 | Average age of onset 58·5 years |
| White and Bland[2] .. .. | 200 | — | — | 25 | Average age of death 62·2 years |
| Palmer[3] .. .. .. .. | 212 | — | — | 73 | — |
| Master *et al.*[4] .. .. .. | 500 | 387 | 112 | 62·4 | 2/3 onset between 45 and 65 years. Average age of death 58 years |
| Rosenbaum and Levine[5] .. | 208 | 143 | 65 | 57 | Peak between 50 and 69 years. Average age of onset 57·7 years |
| Rathe[6] .. .. .. .. | 274 | 194 | 80 | 63 | Average age of onset 59 years |
| Conner and Holt[18] .. .. | 287 | 243 | 44 | 34 | Peak between 56 and 60 years |
| Smith *et al.*[19] .. .. .. | — | — | — | 41 | — |
| Fisher and Zukerman[20] .. .. | 108 | 79 | 29 | 46·2 | Average age of onset 57·6 years |
| Master *et al.*[10] .. .. .. | — | — | — | 60—70 | Maximum over age of 50 years |

data only, most authors are in agreement that hypertension is frequently associated with myocardial infarction. The majority note its presence in 40-70% of cases; and in only one instance is it stated[12] that it does not contribute to myocardial infarction. The majority state that the peak incidence occurs between 50 and 69 years and that the presence of hypertension does not affect the age incidence appreciably; the average age of onset is recorded by most as occurring between 55 and 59 years. To the knowledge of the authors the literature contains only a solitary reference to an autopsy series, in which Bean[13] a persistently elevated pressure above 160 mm. Hg systolic and/or 100 mm. Hg diastolic (Table I), cannot be applied to the patient in whom infarction has already occurred, when the blood pressure may be elevated, normal or lowered. The inclusion in this series of a few cases in whom blood pressure readings are below hypertensive levels but in whom the other findings are confirmative, tend to support this.

The peak age incidence of our cases falls between 60 and 69 years and is in complete accord with Bean's findings. It is also a little higher than the average age of onset as

indicated in Table IV. In the Coloureds this appears to be a decade earlier than in the Europeans, but this may not be significant as there are relatively few cases in the Coloured group.

The impression gained is that the ratio of European to Coloured cases of myocardial infarction is not disproportionate to the total number of cases coming to autopsy. In this hospital until recently only very few Bantu subjects were autopsied, and in consequence the solitary Bantu case has no significance.

On the evidence available in this survey a discussion on the causal relationship between hypertension and myocardial infarction can only be speculative. First, it is difficult to assess whether the one influences the other directly. Both hypertension and myocardial infarction are diseases with greater incidences in the later age groups, and where the two occur together in a high proportion of cases, this may be a fortuitous association. However, the unduly high incidence of hypertension in this series would suggest that a direct relationship exists.

If a direct relationship is postulated, it may be through either, or a combination, of two factors. Although hypertension and atheroma are two separate disease entities, which may occur independently of each other, there is evidence that atheroma occurs more frequently and to a greater degree in the hypertensive subject, particularly in the young hypertensive where the ageing factor is of less significance; and with an increase of atheroma, coronary insufficiency is more likely to occur.

A second and probably more important factor is that hypertension exerts greater functional demands on the coronary arteries. A degree of coronary artery narrowing in the heart of an aged inactive person, may permit the passage of enough blood for the usual requirements of such a myocardium; the same degree of narrowing may be inadequate for the myocardium of a younger and more active subject and an infarct may result; but in a hypertensive subject with similar coronary narrowing and similar if not more extensive myocardial infarction as a result, the myocardial loss has a much greater significance and, all things being equal, a fatal outcome is more likely.

We would like to stress that our findings of the association between hypertension and myocardial infarction refer to fatal cases. This association in non-fatal cases may well be significantly less and non-hypertensive cases of myocardial infarction are likely to have a much better prognosis.


## SUMMARY

1. A post-mortem series of 113 cases of myocardial infarction and coronary insufficiency is presented.

2. These show unequivocally the presence of hypertension in 66% of cases; and in a further 14% there is evidence strongly suggestive of hypertension.

3. It would appear that where hypertension is associated with myocardial infarction a fatal outcome is more likely.


The authors wish to acknowledge the generous help and criticism of Prof. J. G. Thomson at whose instigation the investigation was originally undertaken. They would further like to thank Dr. W. M. Thurlbeck who helped in the compilation of material and Miss M. Kruger for her assistance.


## OPSOMMING

'n *Post-mortem*-reeks van 113 gevalle van hartspierinfarkt en koronêre verswakking word aangebied.

2. Op 'n onweerlegbare wyse toon hulle aan dat hipertensie in 66% van die gevalle aanwesig was; en in die geval van 'n verdere 14% was daar bewyse wat sterk op hipertensie gedui het.

3. Dit skyn dat waar hipertensie met hartspierinfarkt geassosieer is, noodlottige gevolge waarskynliker is.


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# MEGIMIDE IN THE TERMINATION OF BARBITURATE ANAESTHESIA

## A REPORT ON 108 CASES

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Barbiturates are widely used for the induction and maintenance of anaesthesia. Even in infants and in children when suitable veins cannot be found, barbiturates are used rectally to induce anaesthesia. The increased suicidal use of barbiturates has created a world-wide problem. Over the past decade the amount of barbiturate used has trebled, while the incidence of barbiturate coma has increased fivefold.[1-3]

In anaesthesia one may encounter patients who are unduly sensitive to the average dose of barbiturate. The treatment of such cases (together with those of attempted suicide) has in the past been unsatisfactory. Because the central analeptics (picrotoxin, leptazol, Geastimol, coramine and occasionally amphetamine) have not been satisfactory, these cases have had to be treated as cases of prolonged anaesthesia. But, however good the management, and however thorough and intelligent the medical care, the death rate has been 10%, increasing to 20% in serious cases (defined by Nilsson[1] as cases 'which have been in coma for 24 hours or in which complications are present').

A new barbiturate antidote, Megimide (N.P. 13), has therefore created great interest. Hitherto it has been used almost exclusively for acute barbiturate poisoning. This preliminary report deals with 108 cases where it was used to terminate barbiturate anaesthesia.

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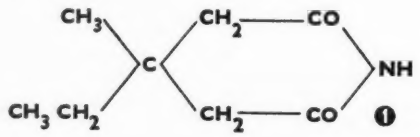
### PHARMACOLOGY

Megimide (N.P. 13) is $\beta$-ethyl-$\beta$-methylglutarimide.



The structural formula is shown in Fig. 1, and resembles the barbiturate ring. It is a colourless crystalline compound. Its solubility in water at neutral pH and at room temperature is only 0.5%.

It is supplied in 10 c.c. ampoules and 100 c.c. vials, both containing 5 mg. of the drug per c.c. It retains its activity for at least 12 months.

Unlike the central analeptics in current use, its action, in therapeutic doses at least, is directly antagonistic to barbiturates.[4]

In rats, mice and rabbits, Megimide in a dose of 15 mg. per Kg. body weight antagonized pentobarbitone, thiopentone and barbitone anaesthesia, reducing the sleeping time by half and doubling the barbiturate-depressed respiration rate. In unanaesthetized animals, Megimide produced fasiculations and/or generalized convulsions.

With doses of 30 mg. per Kg., fatal convulsions occurred in the animals. The intravenous injection of a barbiturate in appropriate dose, before or after the injection of Megimide, prevented or abolished the convulsions.[5]

## CLINICAL FINDINGS

We have used Megimide to terminate barbiturate anaesthesia in 108 cases. The patients (whose ages varied from 18 months to 70 years) included Indians, Africans and Europeans at 3 different institutions.

Premedication has varied according to the age and needs of the patient and the preference of the particular anaesthetist concerned. Some cases had atropine only, some pethidine and atropine and others Omnopon and scopolamine. All except 5 cases were for minor procedures embracing manipulations, dilatation and curettage, abscesses, lacerated hands, fractures, etc.

## ANAESTHESIA

In 99 cases anaesthesia consisted of thiopentone alone or in combination with gas and oxygen. In the remaining cases a relaxant was used as well. The amount of thiopentone varied from 350-1500 mg. On termination of the surgical procedure, Megimide was given routinely, the amount required for the desired degree of consciousness varying from 25-100 mg.

One of us (H. G.) gives 25 mg. Megimide initially and waits for 2 minutes to see the effect. The other two give 50 mg. slowly and assess the effect. All agree that doses of 25 mg. can be repeated after 2-5 minutes to obtain the desired response. Our results were as follows:

A. *35 Cases* (Dr. H. B.). The ages varied between 18-50 years. In all cases 50 mg. of Megimide was given routinely at the end of the operation; 12 cases woke up on the table, 14 cases on the way to the ward and 9 cases in the ward. All cases were awake after 5 minutes without repetition of the injection.

B. *36 Cases* (Dr. H. G.). Originally 50 mg. of Megimide was given at the termination of surgery. Of the first 5 cases, one was euphoric, one was so excited that she had to be given intravenous Somnifaine and one did not wake up on the table.

Subsequently the technique was modified to give 25 mg. of Megimide at termination of surgery and to observe the effect for 2 minutes. With this dosage 6 cases reached the desired level of consciousness within the 2 minutes. In the other cases 25 mg. of Megimide was repeated. Only 4 of the remaining cases needed more Megimide. This was repeated in 25 mg. doses after a further 4 minutes. All cases were awake within 3 minutes of the final dose.

The following cases are of interest:

1. An African male, very muscular, aged 46, admitted for the repair of a lacerated hand.

*Premedication*: Omnopon, gr. ½ + Atropine, gr. 1/100 was given 1½ hours pre-operatively. The patient was wide awake when brought to the theatre. He was sweating with pain.

Thiopentone (500 mg. of a 2½% solution) was given slowly and the patient stopped breathing. Respiration was controlled with gas and oxygen. After 15 minutes he became slightly cyanosed. He was then intubated without any difficulty and did not even cough or strain on the tube. (*N.B.* No relaxant or further anaesthetic was given). Artificial ventilation was continued for a further 5 minutes on oxygen alone; 25 mg. of Megimide was then given slowly over a period of about 30 seconds. At the end of the injection he was breathing slowly and shallowly. He was given a further 25 mg. and 30 seconds after this he was breathing normally. The pulse rate rose from 80 to 100 per minute. He was carried on gas, oxygen and ether for the rest of the operation, which lasted about one hour and he was fully awake and talking at the end of the operation.

2. An African male, slightly built, aged 25, was admitted for the repair of a urethral fistula.

*Premedication*: Pethidine 100 mg. and atropine gr. 1/100 1 hour pre-operatively.

The patient was induced with 350 mg. of thiopentone and stopped breathing for 5 minutes. After controlled respiration and resumption of breathing he was carried on gas, oxygen and fractional doses of Flaxedil. Half an hour later he moved, so he was given a further 100 mg. of Thiopentone and again stopped breathing. Following controlled respiration for 5 minutes he resumed breathing. Fifteen minutes later, at the end of the operation, he was still deeply anaesthetized. He was given Megimide 25 mg. with no response. Two minutes later a further 25 mg. was injected and still there was no response. Three minutes later he was given another 25 mg. without response and this dose was repeated after a further 3 minutes. One minute after this he bit on his airway and swallowed and 3 minutes later he responded to stimuli; on reaching the ward he was wide awake.

C. *37 Cases* (Dr. M. B.). The ages varied from 1½ to 58 years. In 7 cases relaxants were used. The infant, aged 1½ and weighing 11 lb., was given 5 mg. of Megimide with a

good result. All adults were given 50 mg. routinely at the conclusion of surgery; 32 cases woke up within 5 minutes. One case responded after another 25 mg. and the remaining 3 only after yet another 25 mg. had been given (i.e. after a total of 100 mg. Megimide).

Two cases at the beginning of the series showed twitching of the masseter muscle. This lasted about 2 minutes and settled without any treatment.

Students inadvertently injected Megimide extravenously in 2 cases without ill effect.

A follow-up of cases after 24 hours showed no ill effects attributable to Megimide.

We all noted that the first noticeable effect of Megimide is on respiration, which increases both in rate and depth. There is usually an increase in pulse rate by about 10 beats per minute and there is no noticeable effect on the blood pressure. Recovery of consciousness was usually to the stage of response to stimuli and replies to questioning; some patients were drowsy and relapsed into sleep. This was a natural sleep, for an external stimulus, e.g. squeezing of the wrist, resulted in instant awakening with the startled response normally produced in a subject abruptly aroused from natural sleep.

## CONCLUSIONS

Our observations agree with those of other workers, viz. that Megimide brings about a rapid recovery of consciousness in patients under light or deep barbiturate anaesthesia. Its greatest value, in contrast to the action of the analeptics previously used, is its power to reverse the depressant action of thiopentone on the respiratory centre.

The dosage of Megimide is not proportional to the amount of thiopentone used, but depends rather on the sensitivity of the patient to the thiopentone and the depth of anaesthesia at the conclusion of surgery.

The use of Megimide has simplified post-operative nursing of cases anaesthetized with thiopentone and is of particular value in a busy surgical ward dealing with a large number of minor cases, especially at night.

We recommend its use in casualty, out-patient and dental surgery, provided the patient can rest until he is fully awake and is accompanied by a responsible person.


## SUMMARY

1. The use of Megimide as an antidote to thiopentone in 108 cases is described.
2. Megimide brought about a rapid recovery of consciousness in all cases.
3. Megimide is a direct antidote to thiopentone.
4. The value of Megimide in a busy surgical ward and casualty practice is stressed.

## OPSOMMING

1. Die gebruik van Megimide as 'n teenmiddel vir tiopentoon in 108 gevalle word beskryf.
2. In al die gevalle het Megimide 'n vinnige herwinning van die bewussyn tot gevolg gehad.
3. Megimide is 'n regstreekse teenmiddel vir tiopentoon.
4. Die waarde van Megimide in 'n bedrywige chirurgiese saal en by die behandeling van ongevalle word benadruk.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# ASPECTS OF THE PROBLEM OF STRESS INCONTINENCE

## A MODIFICATION OF THE ALDRIDGE OPERATION


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The problem of stress incontinence remains a serious one. The challenge is reflected in the variety of operations designed to effect a cure. The relevant literature takes one from the latest operation by Kasdon in 1951[1] (suspension by round ligaments), through Marchetti[2] (suture of urethra to symphysis pubis), Millin-Read[3] (lateral rectus fascial supports), Meigs[4] (rectus fascial sling and plication), Aldridge[5] (rectus and external oblique fascial sling), Goebell[6] (pyramidalis muscle strips), back to the operation by Giordano in 1907[7] (gracilis muscle strips).

A study of important contributions to the

relevant anatomy and physiology would take one from the important work by Jeffcoate[8] through Hinman,[9] Ashoff,[10] Pawlik,[11] Kohlrausch,[12] and Cowper[13] in 1698 right back to Vesalius in 1542.[14]

### DEFINITION

Stress incontinence may be defined as the escape of urine through the vesico-urethral sphincter, brought about by involuntary increased intra-abdominal pressure, e.g. by physical exertion or by sneezing, coughing or laughing.

### BASIC LOCAL NATURE OF STRESS INCONTINENCE

This may be described at being of 2 kinds:

1. Inability of the vesico-urethral sphincter to remain completely closed during a sudden rise in intra-abdominal pressure.

2. General weakening of the various fascial planes and ligaments that support the uterus, bladder and urethra, allowing a degree of descensus in some or all of these organs.

### ETIOLOGY

1. *Congenital*: Here the condition persists throughout childhood and adolescence and is aggravated by parturition. The girl suffering from this condition is often described as neurotic or highly strung and consequently incontinent, whereas the neurosis usually results from the incontinence. The local cause is obscure, but most probably it is due to an inherently weak musculature and poor innervation.

Treatment is a suspension type of operation after the childbearing period. If childbearing does not enter the picture, the operation is done in early adulthood.

2. *Obstetrical Injury*: There is no doubt that obstetrical laceration and contusion of the bladder sphincter and supporting tissues form the most important cause of stress incontinence.

Factors playing their role here are:

(a) Dystocia.

(b) Injudicious or unskilful attempts at forceps delivery.

(c) Too rapid delivery.

(d) Prolonged distension of the urinary bladder during labour or the puerperium.

3. *Senility Factors*: These may play a role in either parous or nulliparous women, appear late in life, and are part and parcel of a general descensus and prolapse of the pelvic organs due to degeneration of the suspensory ligaments and muscles.

4. *Post-Operative*: These are cases in which attempts made to cure some form of ptosis resulted in little more than a derangement or distortion of the anatomy. They may also be patients who had already suffered from some degree of stress incontinence and a purely vaginal type of operative treatment had served only to make the condition worse and future efforts to effect a cure far more difficult.

The writer has been consulted by 7 women with stress incontinence where at least one futile vaginal type of operation had previously been performed. All these patients were subsequently cured by the original Aldridge operation.[5]

The case reported below, however, had previously undergone 2 fruitless vaginal procedures. As the stress incontinence was very severe, with advanced descensus, a modification of Aldridge's operation was carried out as described.

### CASE REPORT

Mrs. V., a European housewife, 51 years old, grav. 4, para. 4, was seen on 18 March 1955. Her latest menstrual period had lasted from 14-23 February 1955.

*Complaint*: (1) 'No bladder control for 10 years'. She has to 'press on bladder from below' to initiate deliberate voiding.

(2) 'Sagging and pressure feeling' in the region of bladder for about 7 years.

*History*: She has had very poor bladder control since about 10 years ago. The condition has become progressively worse despite 2 operations to cure the complaint. When she sneezes or coughs she involuntarily voids some urine and when she laughs the flow continues until the bladder is 'empty'.

Periodically she has mild lumbar backache and frequently a burning sensation during micturition. The clinical history of the other systems is negative.

*Previous History*: She was a normal spontaneous full-time child, one of three children. She had measles and chicken-pox in childhood, no rheumatic fever, scarlatina or renal disease. She has had no accidents or injuries.

*Menstruation*: Menarche at 13 years; always regular 28/4-day cycle.

*Pregnancies*: She had 4 full-term deliveries between 1926 and 1939. All were described as 'long and difficult' labours.

*Operations*: (1) In 1947 she saw a specialist who performed a vaginal repair with amputation of the cervix. At the same time a tubal ligation was carried out through a lower abdominal median incision. She had no relief.

(2) In 1949 the same surgeon took her to his teaching department at a Medical School hospital and performed another vaginal operation. This is described in the hospital records as an 'anterior colporrhaphy'. This effected no cure either.

*Family History*: Her father died at 70 years from 'heart disease'. Her mother died at 64 years from diabetes. No known relative has 'bladder trouble'.

*Examination*: She was healthy-looking and well-nourished, mentally normal and calm. Weight: 178 lb. Height: 5 ft. 6 in.

*Head, Neck, Thyroid and Central Nervous System*: Negative.

*Breasts, Lungs, Heart*: Negative.

*Abdomen*: Somewhat obese. No enlarged organs or lumps palpable.

*Pelvis*: *Vulva and Introitus*: Normal, parous.

*Urethra*: Normal meatus.

*Vagina*: Walls very relaxed with third degree cystocele. Signs of a previous operation. Posterior vaginal repair holding well.

Cough produces a balloon-like structure the size and shape of half a golf ball at the introitus. This proved to be part of the cystocele.

*Cervix*: Previously amputated. Nothing abnormal seen.

*Uterus*: This was a smooth globular mass about 8-10 cm. in diameter. Freely movable. No tenderness. Evidently fibromyomatous.

*Adnexa*: Negative.

Rectal examination confirmed foregoing findings.

*Endoscopic Examination of Bladder and Urethra*: Mild chronic cystitis. Oval irregular sphincter, which opens readily with abdominal stress.

*Laboratory Findings*: Haemoglobin: 11.8 g.%. *Blood count*, within normal limits. *Haematocrit*: 41.4 (Wintrobe). *E.S.R.*: 10.5 mm. (Westergren). *Residual urine*: 160 ml. *Urinalysis*: A few leucocytes per high power field. Otherwise negative.

## TREATMENT

An operation was performed on 22 April 1955, based on the original Aldridge operation. With the patient in the lithotomy position an incision was made in the anterior vaginal wall in the mid-line from a point 1 cm. from the edge of the cervical remains to a point 0.5 cm. behind the posterior lip of the urethral meatus. Much scar tissue was encountered and had to be severed before the 2 vaginal flaps could be freed in the usual way and the base of the bladder completely exposed. Some remains of the pubo-coccygeus could be identified.

The whole urethra was freed from all adhesions and completely mobilized except for its dorsal surface. This was to undo distortion and to permit concentric contraction of the bladder sphincter after completion of the operation.

A Foley catheter was placed in the bladder and inflated to determine the exact site of the sphincter.

On each side of the mid-line and in the sagittal plane 2 plicating mattress sutures of 00 chromic catgut were placed from a point in the middle of the sphincter to a point about 3 cm. posteriorly on the bladder base. This was to re-incorporate the over-stretched and torn fibres of the trigonal muscle with the sphincter itself, so facilitating the initiation of the act of voiding as the trigonal muscle's insertion into the sphincter plays a major role in this act.[8] Nearly all patients with a somewhat advanced cystocele, even when there is no other discomfort than pressure, will complain that they often have difficulty in starting to void, even with a full bladder. The reason is that the trigonal muscle no longer effects enough 'pull' on the posterior segment of the sphincter.

With 2 layers of transverse mattress sutures the cystocele was now obliterated. The procedure is preferred to the purse-string variety which in itself tends to pull the trigonal muscle away from its sphincteral insertion.

The patient was next placed in the flat dorsal position and a Pfannenstiel type of incision made between 2 points about 4 cm. medial to each of the 2 anterior superior iliac spines. Two aponeurotic fascial strips 1.5 cm. wide were now developed as described by Aldridge,[5] but in this case they were taken about twice the usual length, i.e. about 14 cm. This extra length is readily obtained by pulling the ends of the incision upwards after undermining the subcutaneous fat. The medial attachment of the fascial strips were about 2 cm. from the mid-line on each side and about 5 cm. above the upper margin of the pubic bone.

(*Strength of this Fascia*: During an operation on another patient the writer excised a piece of fascia about 5 cm. long by 0.5 cm. wide and including the oblique aponeurosis-rectus fascia junction. This strip withstood a scale pull of 12 lb. without breaking).

The patients' legs were put up once more and a Bozeman's forceps inserted to the left

of the urethra and behind the pubic bone. With a finger in the abdominal incision the end of the forceps was guided through the space of Retzius to a point 0.5 cm. lateral to the attachment of the right fascial strip. Here it was pushed through the right rectus muscle and the strip brought down over the urethra and out at the vagina on the left side. Similarly the left fascial strip was brought over the urethra and out to the right of it. With the Foley catheter balloon showing the land-mark the 2 strips were now crossed below the bladder neck and held in position with clamps, the bladder neck being raised to a position considered normal (Fig. 1).

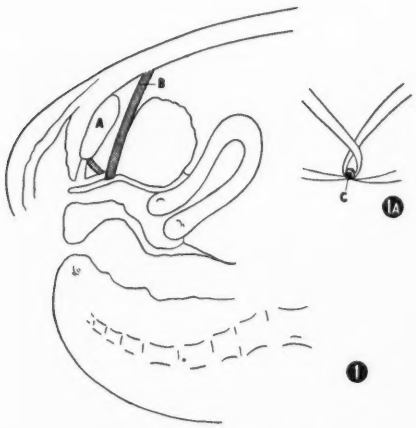


*Fig.* 1. A lateral view of one half of the sling in the modified Aldridge operation. 'A' shows the way the strips cross above and below bladder neck.

The success or failure of the operation may depend entirely upon the new position of the sphincter, and this should be very carefully judged. The junction of the 2 strips below the urethra is secured with 000 silk sutures and it is also sutured to the bladder neck itself (Fig. 1A). The remainder of each aponeurotic strip is now stretched forward and upward and sutured to the periosteum of the pubic ramus on the side it is facing, and at a point behind the origin of the bulbo-cavernosus. This is done to form a second sling holding the bladder mainly forward when the patient is in the erect position. The primary sling holds it mainly upward. Next the surface of what remained of the cervix was firmly secured to the fascial crossing below the bladder neck with 20-day 00 chromic catgut, so that whatever drag there might be backwards by the myomatous uterus would only be a static pull on the pubic rami without displacing the bladder neck or base.

The rationale for crossing the slings both above and below the urethra is that in this way a larger area of contiguity with and adhesion to the bladder neck is effected—hence providing stronger supports. The rest of the vaginal repair was routine and the abdominal wound was closed in the usual way.

She was allowed up on the second post-operative day, the indwelling catheter was removed on the 4th day and she was discharged home on the 10th day. Residual urine fell to below 50 ml. on the 27th post-operative day, since when bladder function has been normal.

At 5 months an endoscopic examination showed the sphincter to close concentrically and well during abdominal stress and without any incontinence. The cystogram is shown in Figs. 2A, 2B.

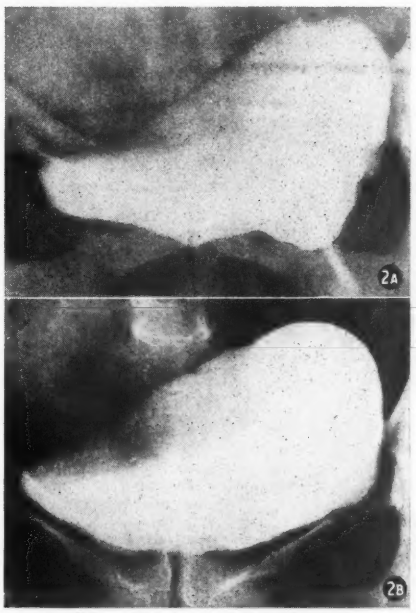


*Fig.* 2 *A.* Mrs. V. Cystogram AP erect before operation.
Indentation due to myomatous uterus. Note the level of the base of the bladder. Severe stress incontinence.
*Fig.* 2 *B.* Same case as in Fig. 2 A. Cystogram 5 months after modified Aldridge operation. Normal bladder control.

Hysterectomy was not performed during this operation because the fibromyoma caused no symptoms and it had been established that there had been no appreciable enlargement of this tumour during the last 5 years.

## DISCUSSION

### WHEN SHOULD A SUSPENSION TYPE OF OPERATION BE DONE?

To the writer it appears that in all those cases where the base of the bladder has descended to a point below the centre of the long axis of the symphysis pubis, as shown in the erect A P or lateral cystogram, it is in the best interests of the patient to add a suspension operation to the regular vaginal type of repair.

In 28 consecutive cases with symptoms in any way related to the bladder, the author took cystograms with 250 ml. Diodrast in the bladder and a central ray trained horizontally on midpoint of the upper margin of the symphysis publis. These cases fell into 3 distinct groups. Representative cystograms of each group are illustrated in Figs. 2A to 5B. Of these 28 cases:

(a) Six nulliparous married women complained of sensations of burning with micturition, increased frequency and 'pressure' in the bladder region. All had normal sphincter control and no stress incontinence, and none had the bladder base below the upper margin of the symphysis pubis (Fig. 3).

(b) Fourteen parous cases presented symptoms that ranged from very mild to fairly severe 'pressure' or a 'sagging' feeling in the pelvis. Six of these cases showed well established cystoceles of varying degree. The other 8 had only incipient cystoceles. None of these had any stress incontinence and all had the bladder base at the level of, or above the midpoint of the long axis of the symphysis pubis (Figs. 4A, 4B).

(c) The remaining 8 cases, also parous, had

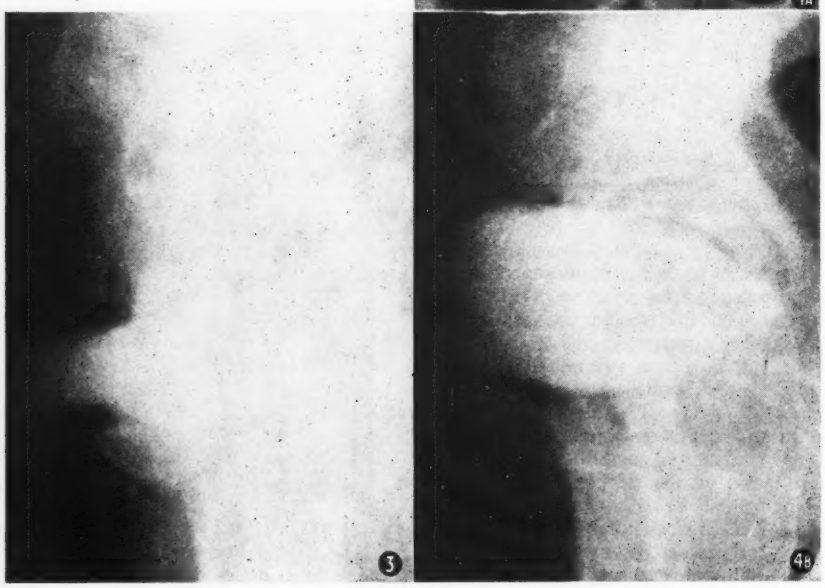

*Fig.* 3. Mrs. J., 32 years old, nullipara. Cystogram (lateral view). Normal bladder control.
*Fig.* 4 *A*. Mrs. S., aged 41 years, para 4.
Cystogram (AP erect). Normal bladder control.
*Fig.* 4 *B*. Same case as in Fig. 4 A. Lateral view.

well established stress incontinence, cystocele and varying degrees of uterine descent. Seven of these cases had previously had some form of vaginal operative procedure. In all of these the base line of the bladder was below the

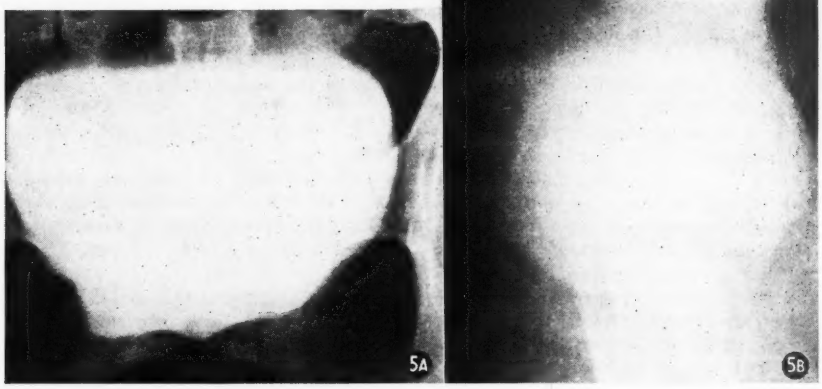


*Fig.* 5 *A.* Mrs. B., 28 years old, para 3.
Cystogram. AP. Note level of bladder base. Bad obstetrical history. Severe stress incontinence.
*Fig.* 5 *B.* Same case as in Fig. 5 A. Lateral view.

aforementioned level on the symphysis (Figs. 2A, 5A and 5B).

It seems reasonable to conclude that when the bladder base level has fallen to the horizontal line through the middle of the long axis of the symphysis, or below it (as seen in a cystogram), a suspension procedure is mandatory in conjunction with a vaginal repair, whether a patient has stress incontinence or not, in order to avoid the need for a corrective operation later and under more difficult conditions.

The series of cases is admittedly a modest one but the results do point to the possibility that a cystogram may be as much a *sina qua non* in gynaecological bladder operations as cystoscopy itself.

Stress incontinence is not an easy condition to cure and much depends on the skill and experience of the surgeon. It does not consist of the removal of pathological organs but requires a change in the mechanics of the anatomy of the parts in order to improve the function of the organs.

SUMMARY

Some of the various operations for stress incontinence are listed and the causes of this condition mentioned.

A modification of the Aldridge operation is described and a case is reported.

The value of cystograms in conditions of functional problems of the bladder is stressed, supported by representative cystograms taken in 28 cases with bladder symptoms. This type of X-ray examination can be helpful in deciding whether a purely vaginal operation will suffice or whether a suspension procedure should also be carried out in cases of uterine prolapse and cystocele.

OPSOMMING

'n Paar van die verskillende operasies vir drukinkontinensie word aangestip, en die oorsake van hierdie toestand word genoem.

'n Wysiging van die Aldridge-operasie word beskryf, en verslag oor 'n geval word gedoen.

Die waarde van sistogramme by die behandeling van funksionele probleme van die blaas word benadruk, en dit word gesteun deur verteenwoordigende sistogramme wat van 28 pasiënte met blaassimptome geneem is.

Hierdie tipe X-straal-ondersoek kan van waarde wees waar daar besluit moet word of 'n suiwer skede-operasie voldoende sal wees, dan wel of 'n suspensieprosedure ook toegepas moet word in gevalle van baarmoederuitsakking en blaasbreuk.

My deepest gratitude is expressed to Prof. H. C. Taylor Jr., Prof. James Bordley III and Associate Prof. O. J. Severud of Columbia University and Prof. Arthur Wallingford of Albany Medical College

for the unforgettable training and guidance they gave me while I was in the U.S.A.

My sincere thanks also go to Drs. A. A. Meyer, J. N. Jacobson and E. van den Burgh, of Cape Town, who took the cystograms.

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# WHIPPLE'S INTESTINAL LIPODYSTROPHY

## A CASE REPORT AND A DISCUSSION

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In 1907 Whipple[1] reported on a hitherto undescribed condition which he labelled 'intestinal lipodystrophy'. The malady occurred in a missionary physician and was characterized by loss of weight, abdominal pain, distension, fatty diarrhoea, polyarthritis and anaemia, Since then there have been further reports in the literature on this rare condition.

The disease is not usually suspected during life unless a laparotomy is performed, but is commonly diagnosed as sprue, tuberculous peritonitis, pancreatitis or Addison's disease.

The etiology of Whipple's disease remains unknown, but several theories have been propounded:

1. *Lymphatic Obstruction.* No obstruction has ever been found in the thoracic duct or in the main mesenteric lymph channels. Lymph stasis does, however, exist, but is probably secondary to primary pathology in the lymph glands.

2. *Lymphoid Tissue.* Some abnormality of lymphoid tissue resulting in excessive accumulation of abnormal products of the glycoprotein complexes possibly due to enzymatic disturbance, viz.

Disturbance in Fat Absorption and Transport ↓ Lymph Stasis and Lymphadenopathy

Glycoprotein Complex Formation ↓ Lymphadenopathy

3. *Intestinal Epithelium.* Christie and Galton's theory[2] (based on autopsy reports) is that the primary pathology is in the intestinal mucosa, through which about two thirds of digested fat is absorbed. Their view is that there is some abnormality in the handling of the lipids by the intestinal mucosa, resulting in accumulation in the glands, which ultimately gives rise to foreign-body granulomata and stasis.

The end products of fat digestion consist of:
(a) Unhydrolysed water-soluble neutral fat which is in a finely emulsified state.
(b) Water-soluble bile fatty acid complex.
(c) Mono- and di-glyceride, some soluble and some insoluble.
(d) Water-soluble glycerol.

According to Frazer, the water-soluble products are absorbed directly into the portal blood, whereas the water-insoluble emulsified product is absorbed via the intestinal mucosa into the lacteals and then into the thoracic duct.

About two thirds of the absorbed fat is carried via the lymphatics.

The diagnosis depends on finding excess lymphoid deposits and mononuclear cell infiltration in the intestinal mucosa and the mesenteric lymph glands. Histochemical studies have shown the fats to consist of:
(a) Neutral and acidic lipids.
(b) Fatty acid soaps.

(c) Cholesterol esters.
(d) Phospholipids.
(e) Unsaturated lipids.

The mononuclear cells are filled with large amounts of polysaccharide-protein complexes (glycoprotein). A combination of these 2 phenomena is pathognomonic of Whipple's disease.

The malady appears to affect males between the ages of 33 and 56 years, and is fatal in 1 to 5 years after the symptoms develop.

## CASE HISTORY

A European male aged 54 years was admitted to the Surgical Professorial Unit of the Johannesburg General Hospital on 12 April 1955.

*Major Complaint.* Severe abdominal pain for 48 hours.

*History.* About 1 week before admission the patient developed pain in the epigastrium. The pain was not severe at first but gradually became worse and was more severe 2 days before admission to hospital. It had been burning in nature and was continuous, localized to the epigastrium and the right iliac fossa. There had been no associated vomiting, although he had felt nauseous. His bowel action had been normal with no change in the character of the stool.

*Previous Illnesses.* The patient had been suffering from 'rheumatism' for the past 4 years. He had complained of pain in his shoulders, wrists and ankle joints. This pain had never been severe and was relieved by aspirin.

About one year before admission he had a similar attack to the one described above. On that occasion it was associated with diarrhoea. He passed frequent, pale, foul-smelling stools and that attack lasted for about 1 week. During this period the patient reported loss of weight.

A subsequent barium meal examination revealed no pathology.

*Systematic History.* Nil relevant.

*On Examination.* A middle-aged male lying flat in bed in obvious pain.

*Skin.* Almost a depigmented skin with areas of hyperkeratosis on the face and hands.

*Head and Neck.* Pupils react to light and accommodation. Tongue furred and dry. No glands palpable in the neck. Jugular venous pressure not increased.

*Respiratory System.* Air entry good. Scattered crepitations over both lung fields.

*Cardio-Vascular System.* Pulse rate 80 per minute. Blood pressure 126/80 mm. Hg. Sounds closed.

*Abdomen.* The abdomen did not move well on respiration. No masses were visible. There was guarding over the entire abdomen with rigidity in the epigastrium and the right iliac fossa.

*Rectal Examination.* Nil.

*Central Nervous System.* All reflexes were present and normal; tone equal and present. No loss of sensation.

*White Cell Count.* 12,000 per c.mm.

*Urine.* No albumin or acetone.

A diagnosis of an acute abdominal condition, probably due to an acute appendicitis, was made.

*Operation.* Laparotomy was performed under a general anaesthetic. On opening the peritoneal cavity a thin sero-purulent exudate was noted. A swab was taken of the fluid. The appendix was isolated and found to be normal. A systematic search of the abdominal contents was then undertaken.

The stomach appeared normal but was covered with flakes of fibrin. The lesser sac was opened but no pathology was noted. The duodenum was normal. In the jejunum, just distal to the jejuno-duodenal junction, for about 5 to 6 feet the bowel was oedematous, congested and covered with flakes of fibrin.

The bowel wall felt thickened to palpation, and the lacteals were prominent. Large glands were present, about 1-3 inches in diameter, at the base of the mesentry of the involved segment of bowel. The glands were discrete and stony hard to palpation. The rest of bowel appeared normal.

The liver was not enlarged, no masses could be palpated and the capsule was not thickened. The spleen was normal.

It would have been impossible to resect the involved segment of bowel and glands. As the pathology was not known, one of the proximal glands was removed and the peritoneal cavity was drained. The wound was closed in layers.

*Post-Operative Course.* The patient was put onto intravenous fluid therapy, Wangensteen suction and antibiotics.

Within 24 hours he had passed flatus and his temperature had returned to normal. The fluid therapy was stopped and oral feeding started. Antibiotics were discontinued after the third day.

He felt extremely well and his abdominal pain had disappeared. His bowels acted normally and regularly.

*Pathological Report* (Dr. R. J. S. Sichel). Sections of the mesenteric lymph node showed the presence of dilated sinuses filled with large foamy cells and multinucleated giant cells. These foamy cells also appeared to be replacing much of the gland parenchyma.

Suitably stained preparations showed the presence of fat and a substance giving the

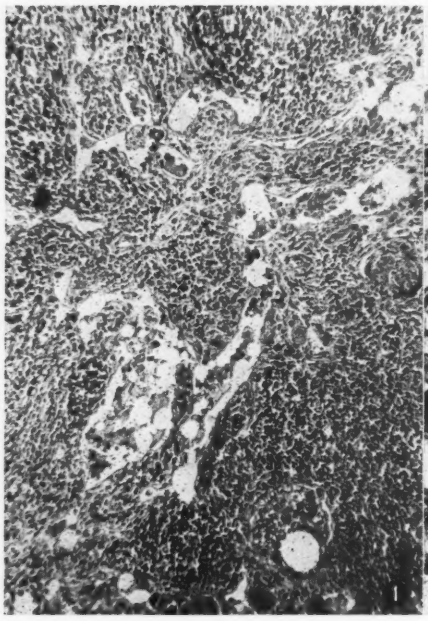

*Fig. 1.* Photomicrograph of a section of the mesentric lymph node showing dilated sinuses (×50).

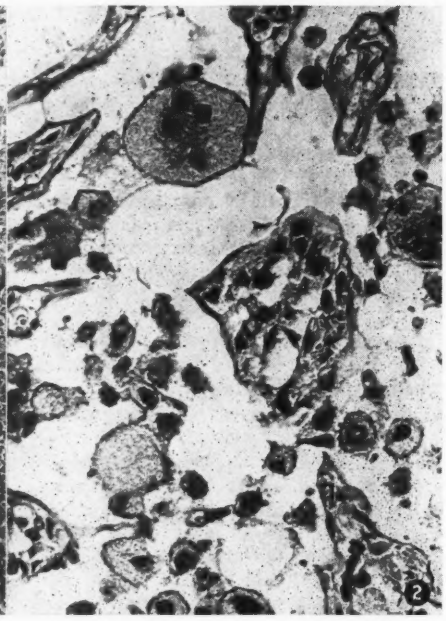

*Fig. 2.* Section of the mesenteric lymph node showing foamy cells and giant cells (×200).

reactions of glycoprotein in these foamy phagocytes (Figs. 1 and 2).

The histological appearances are consistent with those described in Whipple's intestinal lipodystrophy.

*Pus Swab.* No bacteriological culture.

*Other Investigations*:

*Blood Count*: Haemoglobin 12.0 g.%.
Colour index —.
Erythrocytes per c.mm. —.
Leucocytes per c.mm. 12,600.
Neutrophils 76%.
Monocytes 2%.
Lymphocytes 18%.
Eosinophils 3%.
Basophils 1%.
Packed cell volume: 38%.
Mean corpuscular haemoglobin concentration: 31%.

There was a slight anaemia with slight hypochromia and anisocytosis of the red blood cells. A slight neutrophil leucocytosis was present. Platelets appeared increased in numbers on the smear submitted.

*Sedimentation Rate*: 35 mm. in 1 hour. Normal range (male adult): 1-10 mm. The corrected sedimentation rate fell in the zone of a slight increase.

*Blood Lipids* (per 100 ml).
Total Lipid: 431 mg.
Phospholipid: 190 mg.
Total Cholesterol: 132 mg.
Free Cholesterol: 36 mg.
Cholesterol Esters: 96 mg.
Percentage Esters to Total: 73%.

*Stool Examination*: Macroscopic examination: Brown, semi-solid stool.

Microscopic examination showed occasional starch granules, and undigested muscle fibres. No fat globules or fatty acid crystals were seen.

Weight of faeces: 85 g.
This specimen contained 80.9% water.
Of the total solid, less than 10% was fat.

*Blood Sugar Tolerance Curve.*

| *Specimen* | *Blood Sugar (mg. per 100 ml.)* |
|---|---|
| Fasting | 70. |
| ½ hour | 79. |
| 1 hour | 100. |
| 1½ hour | 79. |
| 2 hour | 70. |

*Blood Electrolytes.*
Blood urea: 26 mg. per 100 ml.
Plasma chlorides: 83 mEq. per litre.
Serum potassium: 5.4 mEq. per litre.
Serum sodium: 130 mEq per litre.

| *Serum Amylase* | *Units* |
|---|---|
| Fasting | 70. |
| Specimen 1 | 73. |
| Specimen 2 | 80. |
| Specimen 3 | 84. |
| Specimen 4 | 80. |
| Specimen 5 | 73. |

*X-ray Report* (*Shoulders, Wrists and Ankle Joints*). These joints were essentially normal, but showed the presence of sub-chondral cystic areas.

## DISCUSSION

This case does not differ markedly from the other cases reported in the literature. Several findings are, however, worthy of further discussion.

The patient was diagnosed as an acute abdominal emergency. Guarding was present over the entire abdomen with rigidity and a 'fullness' in the right iliac fossa. Rebound tenderness was present and the patient had a white cell count of 12,000 per c.mm.

The appearance of the first 5 to 6 feet of jejunum suggested Crohn's disease of the bowel, having an oedematous inflammatory appearance with congestion of the vessels and fibrinous shreds on the serous surface. The demarcation of the affected segment also suggested a regional ileitis.

Many of the symptoms in Whipple's disease are the same as those occurring in Crohn's disease and, as Jones and Paully[3] point out in their case report, if the fat-filled lymphatics seen in Whipple's disease are substituted by lymphoedema, the histology of the 2 conditions is similar.

However, inspection and palpation of the associated lymph glands discouraged the diagnosis of Crohn's disease, for although the glands were discrete, they were stony hard on palpation and 1-3 inches in diameter.

Lymphatic obstruction has been mentioned by some authors as the etiology of Whipple's intestinal lipodystrophy, and although obstruction of the thoracic duct has not been reported in any of the autopsy findings, the appearance of fat-filled, distended mesenteric glands could point to an obstructive element.

An almost identical picture can be produced in the absence of obstruction by feeding animals on liquid paraffin over long periods.[4]

In the present case the lacteals on the involved segment of bowel were prominent, and in retrospect one is doubtful whether the fluid in the peritoneal cavity was indeed pus or whether it was ascitic fluid.

The low serum sodium and plasma chlorides suggest the possibility of deficient adrenocortical secretion. According to Prunty and Macoun[5] and Black[6] there is no biochemical evidence of suprarenal inefficiency in this disease.

The low blood sugar curve could indicate pathology in the pancreas, but the prostigmine amylase response was normal, and in other reported cases sections of the pancreas taken at autopsy have been normal.

The normochromic anaemia is in keeping with the diagnosis of Whipple's intestinal lipodystrophy, and is similar to the blood picture described in the other reported cases of this disease, as is the increase in sedimentation rate.

The blood fat estimations were essentially normal in this patient although it has been proved that there is a deficiency of absorption of ingested fat in this disease.[3]

A normal subject will absorb 90-96% of ingested fat, whereas in Whipple's disease only 63-78% is absorbed.

Like the blood fat estimations, the analysis of the faecal fat contents also proved normal. It should, however, be remembered that all investigations were carried out post-operatively, by which time the patient showed no signs of his malady.

## SUMMARY

1. A case of Whipple's intestinal lipodystrophy is described.

2. The clinical and operative findings are compared with those of other cases reported in the literature.

3. Current theories on the etiology of the disease are discussed.

## OPSOMMING

1. 'n Geval van Whipple se ingewandslipodistrofie word beskryf.

2. Die kliniese en operasie-bevindings word vergelyk met dié van ander gevalle wat reeds geboekstaaf is.

3. Die huidige teorieë oor die etiologie van die siekte word bespreek.

I wish to thank Prof. W. E. Underwood for his encouragement and for allowing me to report this case; Dr. B. J. P. Becker and Dr. B. J. S. Sichel for their helpful advice and criticism, and Dr. F. A. Brandt for the photomicrographs.

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# PHLEGMONOUS ENTERO-COLITIS

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The aim of this paper is to bring more cogently to the notice of medical practitioners, especially surgeons, the reality of 'acute phlegmonous entero-colitis' acute entero-colitis, enteritis necroticans, etc.) firstly, as an entity and secondly, as a dangerous and often fatal complication of gastro-intestinal surgery, even in the era of antibiotic security. Indeed, it will be suggested that the antibiotics are, in fact, largely responsible as an aetiological agent for the recent increase in the incidence of this condition, though as the case presented here indicates, this has not been proven.

A case is presented in which the diagnosis of acute phlegmonous enteritis was made and which was treated accordingly with success. Because this pathology occurs in all parts of the gastro-intestinal tract, a short review of the literature including symptomatology and pathology is not out of place.

Phlegmonous inflammation of the intestinal tract was described as early as the 4th Century by Galen[1] who reported a case of phlegmon of the stomach. In 1700 a case of circumscribed phlegmon of the stomach was described[2] while an example of the diffuse type was described later by Andral in 1829.[3]

The first account of a phlegmonous condition of the small intestine was supplied by Rokitansky[4] in 1842, while Goldschmitt (1887)[5] was the first to describe the condition in the large intestine. It is of interest that Malthas described an unusual case in which the entire gastro-intestinal tract was the seat of phlegmonous infiltration.

In 1937 Burke[6] stated: 'Phlegmon is found with a frequency which decreases in almost inverse proportion to the distance of its site from the stomach'. This statement is confirmed in the following review of the literature.

## CASE REPORT

Mr. N. W., a diamond setter aged 46 years, was admitted to the Johannesburg General Hospital on 5 April 1954 at 3.20 p.m. He volunteered a classical history of acute appendicular pathology commencing 38 hours before. General examination confirmed the diagnosis of severe peritoneal irritation in the right iliac fossa. Temperature, 99.6°F., pulse 74 per minute, white cell count, 18,000 per c.mm.

Within 4 hours operation was performed through a McBurney incision. A foul-smelling generalized peritonitis was found, the result of a perforated gangrenous appendix lying subcaecally. This was removed and the cavity and wounds were drained. In the ward intragastric suction and intravenous therapy were commenced and massive antibiotic therapy instituted as follows:

i. 500 mg. Terramycin (intravenous) were placed in each vacolitre of fluid.
ii. Streptomycin 0.59 g. *b.d.*
iii. Penicillin 1,000,000 units *stat*, then 6-hourly.
iv. The patient was to have 3,000 c.c. of fluid daily including 2 g. of potassium, 150 c.c. alcohol and 300 g. of glucose intravenously. His Wangensteen loss was in addition to be replaced.

The first, second and third post-operative days passed uneventfully. At this stage the passage of flatus and presence of borborygmi heralded commencing peristalsis and after removal of the Wangensteen tube and drip, oral feeding in small quantities was commenced. The patient had done well and his condition was satisfactory. Terramycin administration was stopped and Crysticillin 1 c.c. *b.d.* was instituted.

The following day the patient developed diarrhoea. This continued and became more frequent. On the evening of 11 April (6 days post-operative) he began to have severe diarrhoea with green watery stools, and commenced to vomit. Thorough clinical examination revealed no cause for this relapse and a Wangensteen tube and drip was secured with Omnopon gr. 1/3. His pulse rate was 80-90 per minute and his temperature was normal.

The following morning (12 April) he showed no improvement. He was still passing

frequent watery stools. Gastric suction withdrew a moderate 300 c.c. He was still restless. The same treatment was continued.

That night his restlessness increased and at 4 a.m. on 13 April he was acutely acidotic with the severest dyspnoea. He was extremely shocked, restless, delirious, pulseless, sweating and cold. His blood pressure was not recordable. Despite a colossal respiratory excursion he was suffering from a severe degree of peripheral anoxia. He complained of extreme abdominal cramps and of significance was the fact that he found relief in sitting up (*vide infra*).

Two things were essential if his life was to be saved. His acidosis had to be neutralized and his blood pressure had to be restored. A 2.6% sodium bicarbonate solution was given empirically in the veins of one limb while a vacoliter containing 16 c.c. of Levophed was run into another. His acidotic breathing was dramatically restored to normal and his blood pressure became recordable at 60/40 mm. Hg. The following morning, after 17 g. of sodium bicarbonate, his carbon dioxide combining power was 29% with a slight hyponatraemia. Its was felt that the explanation of his illness was a cholera-type of enteritis, due perhaps to antibiotic therapy which had given a fertile open field to some insensitive bacteria. He was restarted intravenously on 1,000,000 units of penicillin hourly.

Levophed was continued for the next 36 hours and the acidosis was further neutralized with molar lactate solution. Daily blood chemistry was done and corrections adjusted. After a period of some 5 days he began to lose his lethargic state and to approximate normality. His diarrhoea ceased within 48 hours and, except for a Levophed slough of the left leg, he improved rapidly to normal. By now reports on the cultures of various stools sent during the acute phase became available. These were negative except for one which contained *B. proteus.*

The patient then made an uninterrupted recovery and was discharged on 10 May 1954. When seen on 24 July 1954 he was completely well and without any evidence of his grave illness. The sloughed area of his left leg had been grafted with excellent results.

## REVIEW OF THE LITERATURE

### (a) ACUTE PHLEGMONOUS GASTRITIS

It is alleged in the literature[7] that only one case of acute phlegmononus gastritis has been diagnosed before laparotomy or autopsy had disclosed its identity. If this is to be accepted, then early recognition and treatment of this highly fatal condition is essential.

When Guzetta and Southwick[8] presented their case in 1947, a review of the literature revealed that 335 cases had been reported, their own bringing the total to 336. Since then, Stenstrom and Hoehn[7] reported one case, while Miller and Nushan[9] reported another in 1952. It seems therefore that acute phlegmonous gastritis is a moderately uncommon condition, its clinical diagnosis remaining rare. Only an attitude of mind that would include it in the differential diagnosis of every acute abdominal emergency can remedy an unnecessary state of affairs in which fatality is the rule and survival the exception.

*Aetiology.* This is by no means clear, but it seems likely that there is an acute bacterial infection, under conditions ideal for dissemination in the gastric tissues. Haemolytic streptococci have been cultured in over 70% of cases, while staphylococci, pneumococci, *B. coli, B. subtilis, B. proteus* and *B. welchii* have also been encountered. Pre-existing gastric pathology (e.g. carcinoma, gastritis, peptic ulceration) may play a part in the evolution of this disease, but in most cases none is found. Cases have been reported in which the precursor was sepsis elsewhere in the body, e.g. otitis media, tonsillitis, etc. This suggests a metastatic aetiology. When occurring in young individuals, it is often associated with the acute infectious fevers.

The majority of cases fall into the age range of 30-60 years, males predominating in the ratio of 3 : 1.

*Pathology.* This has been described as either a well-demarcated and localized or else diffuse, the former presenting as a well localized abscess chiefly in the submucosa; while in the latter a large portion of the stomach is involved by pathology ranging from early inflammation to gangrene with perforation.

The submucosa is usually the site of the inflammation, with polymorphonuclear infiltration and necrosis.

The descriptive titles given by early observers at autopsy to these 2 types were aptly 'carbuncle of the stomach' and 'erysipelas of the stomach'.

*Signs and Symptoms.* These are usually those of an acute abdominal emergency complicated by severe sepsis. Sudden epigastric pain followed by vomiting heralds its presence with attendant pyrexia and leucocytosis. The signs of peritonitis may soon intervene. It is

of interest to note the sign described by Deininger in 1879, in which the patient gains relief when assuming an upright sitting position.

*Treatment.* Before the advent of antibiotics, therapy was indeed poor and attended by a frightening mortality. Gastric resection had been performed in a number of cases, and where the pathology was diffuse the mortality was 100%. Gastrotomy has been used with success with incision of the abscess and subsequent drainage into the gastro-intestinal tract. But with our present-day antibiotics, the early diagnosis of this condition is vital, for a conservative and early established regime to counter the infection and its dissemination precludes the high mortality of surgery.

### (b) ACUTE PHLEGMONOUS ENTERITIS

Few cases of acute phlegmonous enteritis have been described. In 1946 Beckerman and Laas[10] described a number of cases, many fatal, due to an inflammatory necrosis of the small intestine, mainly in the jejunum. Bulmer[11] stated that 100 cases of phlegmon of the small intestine had been reported.

*Aetiology.* Though this is obscure, evidence in favour of a bacterial origin of this disease has been offered recently, and the advent of antibiotics and their detrimental effect on the sensitive balance of the intestinal flora, thereby creating a fertile field for organismal invasion, support this thesis. At the same time it brings to notice one of the major dangers attendant on the use of antibiotics. Examination of the stools of cases reveals a range of possible culpable organisms, but many cases with sterile cultures have also been reported.

In 1947 Jeckeln[12] described a similar condition which he called *Darmbrand,* and for which he postulated a toxic aetiology. Siegmund[13] stated that the necrosed mucosa contained many bacteria, especially Gram-positive bacilli. Schutz[14] claimed that the offending organism was one closely related to *B. welchii* type A, which occurs normally in the ileum and colon, and is responsible for gas gangrene in man. Between September 1946 and January 1948 Zeissler and Rassfeld-Sternberg[15] received and examined material from 4 cases of enteritis necroticans in Germany, including loops of intestines, both surgical and post-mortem, as well as stools. An organism closely resembling *Clostridium welchii* was isolated from all the material. Cultures of this organism brought on fatal infections in animals when injected parenterally and, when introduced directly into the intestinal tract of guinea pigs, lesions similar to those seen in Man were observed.

Hain[16] found *Clostridium welchii,* type F, in 1/6 of 108 stools from residents of Hamburg, Germany, not suffering from enteritis necroticans, during winter of 1947-1948. These strains were found to be much less pathogenic for animals.

Again it appears that a bacterial infection is the likeliest cause of this condition which favours its multiplication and dissemination.

*Pathology.* Surgical and post-mortem examination of specimens of acute phlegmonous enteritis demonstrate a diffuse sloughing enteritis of the jejunum, ileum and colon. Microscopically the necroses were simple, often extending through the submucosa to the muscle layer.

*Signs and Symptoms.* The patient presents with an acute onset of severe abdominal pain followed by vomiting and profuse diarrhoea, culminating in general dehydration and circulatory collapse. Rigidity of the abdomen may be present, while laboratory investigations frequently reveal:

1. A raised blood urea;
2. A low blood chloride;
3. A raised sedimentation rate;
4. Leucocytosis.

Pyrexia invariably occurs and the resulting toxaemia is usually accompanied by fluid and electrolyte imbalance, further complicating the picture. The loss of intestinal secretions and fluids is apt to produce a state of acidosis.

*Treatment.* This must be immediate and without half measures. Supportive therapy consisting of intravenous fluids, blood and electrolyte replacement must be started without delay. If profound shock ensues, vasoconstrictor drugs, e.g. nor-adrenaline should be used. Stool cultures should be obtained and the sensitive antibiotics employed liberally. While awaiting culture results, a broad-spectrum antibiotic should be used in high dosage. The chief factors in treatment are therefore:

1. Combating shock;
2. Combating organisms;
3. Re-establishment of fluid equilibrium.

### (c) ACUTE PHLEGMONOUS CAECITIS AND COLITIS

Phlegmonous inflammation is least common in these sites in the alimentary tract. Phlegmonous caecitis is defined as a suppurative inflammation of the caecal wall,[1] beginning as a cellullitis of the submucosa and terminating in a circumscribed or a diffuse inflammation. A review of the literature reveals that only 41

cases of phlegmonous caecitis have been described.[1, 11, 17, 18]

*Aetiology.* This is uncertain, bacterial infection being the most likely cause. The organisms predominantly cultured are streptococci and staphylococci, while *B. coli* and pneumococci are also found. The portal of entry, enterogenous or haematogenous, is undecided. In a case described by Bulmer[11] (1952) an active chronic inflammation of the cells of the left mastoid as well as of the left forearm, was present. Superficial abrasions of the intestinal wall caused by hard faecal masses, worms or foreign bodies, may well play an important role in the causation of the condition. The age range in which it has been described is 10-62 years, the incidence being equal among the sexes.

*Pathology.* Two definite pathological types have been described.

1. *The Circumscribed Type.* In this there is an oval area of oedema and redness (with a sharp line of demarcation from the normal tissues) covered by a greyish yellow fibrin, usually with little peritoneal reaction.

2. *The Diffuse Type.* Here there is an acute marked oedema of the entire caecum, firm in consistency, with a thick fibrinous exudate and haemorrhages.

The microscopic picture is essentially the same in both types. There is an infiltration of polymorphonuclear leucocytes, with small abscesses and mucosal ulcers, bacteria invariably being found in the submucosa.

*Signs and Symptoms.* Early in the disease the symptoms closely simulate those of acute appendicitis, while the appearance of a mass in the right iliac fossa within 48 hours should point against the diagnosis of an appendicular abscess, which usually takes longer to appear. The possibility of neoplasm, tuberculosis, regional ileitis, etc. are likely to obscure the diagnosis, which is usually made at operation.

*Treatment.* This should be conservative initially, with the usual care to maintain gastro-intestinal asepsis, as well as administration of the correct antibiotic, by stool culture and sensitivity tests. Since surgery has most often been resorted to in the final elucidation of the diagnosis, ileo-caecal resection has, in fact, been performed in more than half the number of cases reported in the literature. Spivack and Busch[1] reported in 1943 a mortality of 8% where the process was limited to the caecum, while a mortality of 45.4% existed where the pathology extended to other parts of the intestine. An early diagnosis followed by a conservative regime should be aimed at.

## DISCUSSION

We consider that the case presented is one of an acute phlegmonous enteritis, in view of the similarity of its clinical features to those of the cases reviewed. There seems no doubt that the incidence of this specific enteral pathology is greatest in the stomach and adjacent small intestine, particularly the jejunum.

The literature suggests a bacterial aetiology, both primary and metastatic, and there seems little doubt that the pathogen plays the major role in the disease process, but the suddenness of onset is possibly more lucidly explained by an initial allergic reaction to an incidental pathology, with a secondary bacterial invasion into the susceptible tissues.

In this case a further possible and most important aetiological factor exists, viz. that of an antibiotic-induced enteritis. This patient was given Terramycin intravenously at the rate of 500 mg. per litre of electrolyte for 72 hours (about 3 litres were given every 24 hours), as well as large doses of streptomycin and penicillin intramuscularly, because of the co-existing generalized peritonitis. This may have been responsible for the destruction of a large number and variety of intestinal flora, without which the intestinal mucosa is at the mercy of any pathogenic invader. Another cause is the possible imbalance produced among the normal bacterial inhabitants of the intestine, resulting in a preponderance of one or more species which may then assume the properties of a pathogen.

In May 1955 Fowler[19] reported 3 cases of fatal, antibiotic-induced, post-operative staphylococcal enteritis and in support of his injunctions against the injudicious use of the broad-spectrum antibiotics, he reviewed recent literature on the subject, which should not fail to influence the discerning practitioner. It is most disturbing to believe that the combination of penicillin and streptomycin which is used almost universally as a post-operative treatment, may give rise to a staphlococcal enteritis. The fact that the case quoted yielded no positive bacterial cultures complicates the matter further and makes possible the likelihood of some unknown aetiological factor.

Whatever the aetiology may be, there is no doubt that the condition is highly and rapidly dangerous, and deserves immediate recognition if it is to be adequately treated. The main purpose of this communication is to draw attention to an important condition whose identity has so far been neglected.

By early clinical recognition, the avoidance

of surgery and its attendant high mortality may be evaded, while the early and judicious use of the correct antibiotic in adequate dosage should assist greatly in forestalling dangerous complications. This appears to be the ideal, but not the most easily accomplished method of procedure. The delay caused by identification and culture of the offending organisms would court clinical disaster, with the result that an adequate antibiotic regime should be instituted empirically and immediately, without using the powerful broad-spectrum group, e.g. Terramycin, Chloromycetin, etc. The case under review received 1,000,000 units of penicillin intravenously, hourly for 48 hours. It is felt that this high dosage was justified by the extreme prostration of the patient in the presence of a fulminating toxaemia. We are of the opinion, in retrospect, that this procedure was responsible for his recovery.

More recently Todd and Hopps[20] have suggested the use of erythromycin as the best weapon once the condition has occurred. Recovery is exceptional once the infection has become established.


## SUMMARY

A rare but grave disease, recognized since the early Christian era, is described.

A case of acute enterocolitis has been presented which was saved by early diagnosis and prompt treatment.

The antibiotic era has increased the occurrence of this disease and whereas surgery under cover of these new drugs has decreased mortality and morbidity to undreamt-of levels, it has left in its wake the threat of severe and often fatal complications.


We are indebted to Mr. A. Lee McGregor for his help and encouragement in the preparation of this paper and to the Superintendent of the Johannesburg General Hospital for permission to submit this case for publication.


## OPSOMMING

'n Seldsame maar ernstige siekte wat reeds sedert die vroeë Christelike tydperk bekend is, word beskryf.

'n Geval van akute enterokolitis, waar die pasiënt deur 'n vroeë diagnose en onmiddellike behandeling gered is, word bespreek.

In die antibiotiese tydperk kom daar meer gevalle van hierdie siekte voor. Terwyl chirurgie onder die beskutting van hierdie nuwe middels die aantal sterf- en siektegevalle tot 'n ongehoorde peil verlaag het, het dit ook die gevaar van ernstige en dikwels noodlottige komplikasies meegebring.


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## NOTES AND NEWS · BERIGTE

Dr. Neil Bailey has commenced practice as an obstetrician and gynaecologist at 64 Moray House, 199 Jeppe Street, Johannesburg. (Telephones: *Rooms*, 22-2022; *Residence*, 44-2183).

• • •

Dr. J. R. van der Merwe, M.B., B.Ch. (Rand), M.D. (Zurich), D.O. (Lond.), formerly of 12, Lister Building, is now in practice as an ophthalmic surgeon at 67, Lister Building, Jeppe Street, Johannesburg. (Telephones: *Rooms*, 23-8244; *Residence*, 41-3282).

• • •

Dr. and Mrs. D. M. Krikler, of Cape Town, recently left for the United Kingdom and the U.S.A. Dr. Krikler holds a Fellowship in Gastro-Enterology at the Lahey Clinic in Boston and he has also been awarded an Adams grant for research work in medicine. He expects to be away for 2-3 years.

Dr. R. Krikler, who qualified at the University of the Witwatersrand in December 1955, has been chosen by the Women's University Association as the best woman graduate at the University for the year. A special prize is awarded for this distinction.

• • •

Dr. B. Goldberg, M.D. (Lond.), M.R.C.P. (Lond.) has commenced practice as a Physician at 312, Tower Hill, Hillbrow, Johannesburg. (Telephones: *Rooms*, 44-3682; *Residence*, 44-0680).

• • •

Dr. M. M. Suzman of Johannesburg will be leaving towards the end of May to attend the American Medical Association Convention where he has been invited to read a paper on *The Long-Term Use of Anticoagulants* in a *Symposium on Arteriosclerotic Heart Disease* on 15 June 1956.

He will also be a member of the Convention Panel dealing with *Questions and Answers.*

* * *

Dr. Louis Meyerson, M.B., B.Ch., D.O., R.C.P. & S. (Eng.), has commenced practice as an ophthalmic surgeon at 606-608 Clinical Centre, 5 Wanderers Street (between Bree & Plein Streets), Johannesburg. (Telephones: *Rooms,* 23-7785; *Residence,* 42-1049).

* * *

Dr. Zalmon Wolf, M.B., B.Ch., D.P.M., has begun practice as a neurologist and psychiatrist at 53 Pasteur Chambers, 191 Jeppe Street, Johannesburg. (Telephones:— *Rooms*: 23-7679; *Residence*: 41-1469).

### INTERNATIONAL PHYSIOLOGICAL CONGRESS

The 20th International Physiological Congress will be held in Brussels from 30 July—5 August 1956.

Prof. C. Heymans will be the President of the Congress. Communications concerning the Congress should be addressed to the Secretary, Prof. J. Reuse, Faculté de Médecine et de Pharmacie, 115 Bd. de Waterloo, Brussels, Belgium.

Participants in the Congress, who wish to travel by air, can make arrangements through Sabena Belgian World Airlines.

### IN MEMORIAM: DR. L. S. WILLIAMS

We deeply regret to record the death of Dr. L. S. Williams in Johannesburg on 12 February 1956.

Dr. Williams was Chief Medical Officer of the New Consolidated Gold Fields Limited and also took an active part in the work of the South African Red Cross Society. At the time of his death, he was Chairman of the Society's National Executive Committee as well as Chairman of its National Health Education Committee.

### THE JOOSTE CUP

The East Rand Branch of the Medical Association will hold its annual golf competition at the Benoni Country Club on 15 April 1956.

Entries from members of the Medical Association should be forwarded to the Convener (Dr. W. Sacks) at P.O. Box 813, Springs. Intending participants may also telephone Dr. Sacks at 56-5371 (Rooms) or 56-1138 (Residence).

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# PRINCIPLES OF UNIPOLAR ELECTROCARDIOGRAPHY

## AN INTRODUCTION

L. SCHAMROTH, M.B., B.CH. (RAND), M.R.C.P.E., F.R.F.P.S.

*University of Witwatersrand and General Hospital, Johannesburg*

(*Continued from p. 117*)

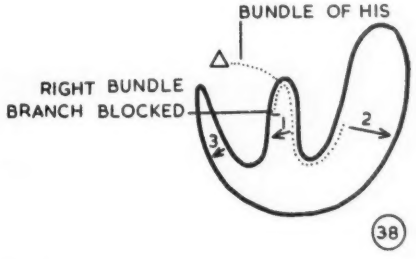
## III. BUNDLE BRANCH BLOCK

Bundle branch block is an electrocardiographic diagnosis. It occurs when conduction is blocked or interfered with in either the right or the left main branches of the bundle of His.

### RIGHT BUNDLE BRANCH BLOCK

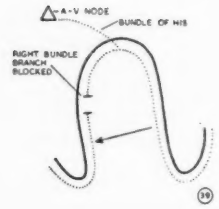
In this condition depolarization of the septum occurs in the normal way, viz. from left to right (Fig. 4). Next, left ventricular depolarization occurs, proceeds in the usual manner (Fig. 6) but is followed by *late right* ventricular depolarization (Fig. 38).

The right ventricle is activated by the stimulus from the left bundle arriving below the block (Fig. 39, arrow).

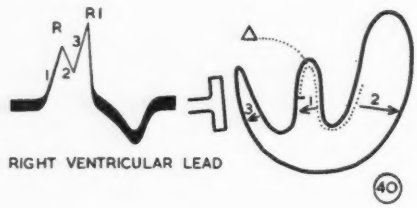



SEQUENCE OF DEPOLARIZATION (FIG. 38)

1. Left to right through the septum.
2. Right to left through the left ventricle.
3. Left to right through the right ventricle.




This sequence will result in a widened and notched R wave or M-shaped complex (Fig. 40) in leads facing the right ventricle—usually leads V1 and V2. The first arm of this M-shaped complex is due to the stimulus spreading *towards* the electrode through the septum




(Fig. 40, arrow 1). The notch in the M-shaped complex is due to the stimulus spreading *away* from the electrode in the left ventricular wall (Fig. 40, arrow 2). The second arm of the M-shaped complex is due to the spread of the stimulus *towards* the electrode through the right ventricular wall (Fig. 40, arrow 3). Because of the delayed and lengthened time of depolarization, the QRS or M-shaped complex is widened.

Note that as right ventricular depolarization occurs late, it is unopposed by left ventricular depolarization and therefore the resulting right ventricular potential is greater than normal. (*Vide* 3 in ventricular complex illustrated in Fig. 40).

Leads facing the left ventricle, usually V5 and V6, will show a broad and slurred S wave representing delayed right ventricular depolarization. This is due to late right ventricular depolarization spreading *away* from the electrode (Fig. 41, arrow 3).

Right ventricular patterns are usually transmitted to lead AVF; left ventricular patterns to lead AVL (Fig. 42).

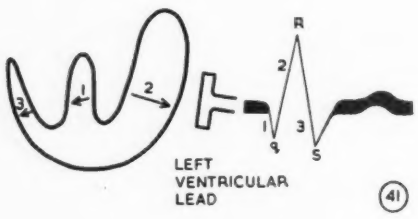
## SIGNIFICANCE OF RIGHT BUNDLE BRANCH BLOCK

Right bundle branch block may occur in:

1. Normal healthy individuals.
2. Acute pulmonary embolism, often as a transient phenomenon.
3. Coronary artery disease.
4. Ninety-five per cent. of cases of atrial septal defect.
5. Mitral stenosis.
6. Active carditis, e.g. rheumatic or diphtheritic.

## LEFT BUNDLE BRANCH BLOCK

When the left bundle branch is blocked, depolarization of the interventricular septum is reversed and now spreads from *right to left* through the septum (Fig. 43). Depolarization of the right ventricle occurs next, followed by depolarization of the left ventricle (Fig. 43).



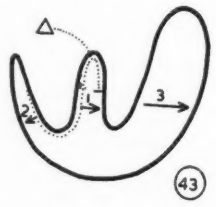
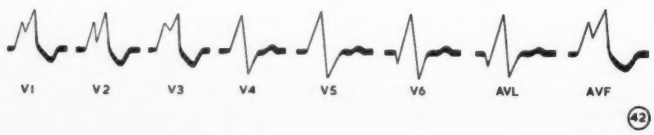
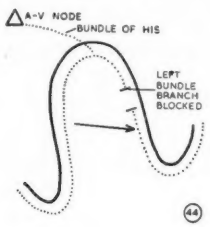




*Fig. 43.* Left bundle branch block.



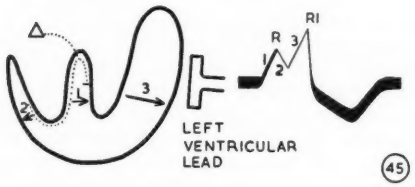
The left bundle branch is stimulated below the block by the stimulus reaching it from the right side of the septum (Fig. 44, arrow).




SEQUENCE OF DEPOLARIZATION (FIG. 43)

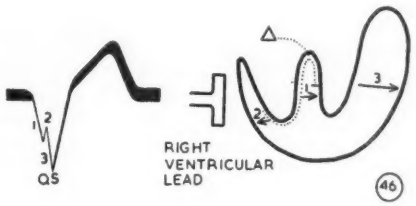
1. Right to left through the septum.
2. Left to right through the right ventricle.
3. Right to left through the left ventricle.

Leads facing the left ventricle, usually V5 and V6, will show widened and notched R

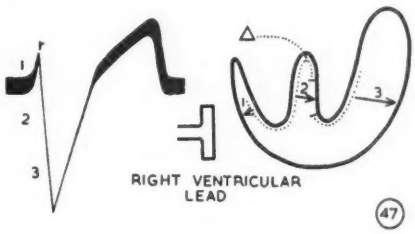



waves or M complexes (Fig. 45). Secondary T wave inversion and S-T segment depression occur.

Right ventricular leads show a broadened and notched QS wave (Fig. 46).



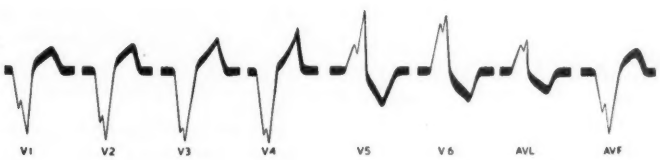

Sometimes right ventricular depolarization occurs at a quicker rate than septal depolarization. Consequently right ventricular depolarization occurs first followed by septal and left ventricular depolarization. Hence a small r wave may be recorded in right ventricular leads (Fig. 47).




Right ventricular patterns are usually reflected in lead AVF and left ventricular patterns in lead AVL (Fig. 48).

## SIGNIFICANCE OF LEFT BUNDLE BRANCH BLOCK

Left bundle branch block nearly always indicates organic heart disease. It is commonly associated with ischaemic and hypertensive heart disease.




OPSOMMING

Die elektrokardiografiese patrone van bondeltakversperring, soos met eenpolige leidrade aangeteken, word geïllustreer en verduidelik.

*(To be concluded)*

# THE GALLOCYANIN STAIN FOR NISSL BODIES

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*and*

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Einarson's stain[1] is excellent, yielding sharply defined Nissl bodies, nuclei and nucleoli, provided the technique is carried out at the appropriate pH, viz. 1.8 or lower. As pointed out by Einarson, the pH of the filtered solution markedly affects the final result, particularly in respect of the non-specific staining of the cytoplasm, karyoplasm and fibres of the nervous tissue. At a pH of 1.84 the amount of so-called co-staining is negligible, whereas it is absent at a pH of 1.58; with increasing alkalinity (up to a pH of 4.57) the amount of co-staining increases while the intensity of the Nissl bodies is little affected.

The colour of Einarson-stained slides is dull, the predominant colour being dark blue, and there is a lack of the brilliance seen with aniline dyes. In his publication Einarson does not mention the optimum dye concentration, the change in colour on boiling with chrome alum or the optimum length of time for boiling. His original prescription is:

| | |
|---|---|
| Gallocyanin ... ... ... | 0.3 g. |
| Chrome alum ... ... | 10 g. |
| Distilled water ... ... | 200 ml. |

Boil gently for 20 minutes.

If the dye solution, prepared in the prescribed manner, is filtered after cooling, it is patent that a large amount of the dye remains undissolved.

Sections stained with the gallocyanin technique generally fade with the passage of time, which is a disadvantage if the slides are required for reference or teaching.

The staining of frozen sections to demonstrate Nissl bodies is far from easy. Initial efforts, using material fixed with neutral formalin and several dyes, including gallocyanin, resulted in indistinct staining of the Nissl substance and only slightly less intense staining of the cytoplasm. This was probably due to inadequate fixation with subsequent diffusion of the dyes into the cytoplasm (autolysis).

The following series of experiments were designed to study the gallocyanin staining of Nissl bodies and to improve the technique.

## EXPERIMENTAL

*Aqueous Suspensions of Gallocyanin.* If gallocyanin is suspended in water, the fluid becomes violet in colour, changing to violet-blue on gentle heating. Even after boiling with chrome alum, there remains a large amount of undissolved material which has an intensely blue colour and which cannot be washed out.

Six hundred milligrams of gallocyanin (Gurr) is suspended in 400 ml. of water. Two separate suspensions are prepared by adding the dye to the water and shaking for a few minutes. The first (G1) is filtered after 30 minutes and the second (G2) is heated in a constant temperature bath at 50° C. for 30 minutes and filtered after cooling.

The previously weighed filter papers, with the undissolved residues, are dried to a constant weight in a desiccator. The percentage of residue after extraction of the water-soluble fraction is 81.7 in the case of G1 and 79.2 in the case of G2. The clear filtrate in both cases is dark violet-blue in colour but FG2 is bluer, which suggests the possibility that at least 2 different fractions of the dye may be extracted.

The filtrates FG1 and FG2 are reduced to small volume on a water bath and distilled water added to each up to a volume of 200 ml. Each is divided into 2 portions of 100 ml., FG1*a*, FG1*b*, FG2*a* and FG2*b*. Five grammes of chrome alum are added to both FG1*b* and FG2*b* and all 4 are heated on a water bath for 30 minutes. FG1*b* and FG2*b* change in colour from violet to dark slate blue but FG1*a* and FG2*a* show no colour change. After cooling the fluids are filtered. A trace only of precipitate

* *Present address*: Department of Physiology, University of Pretoria, Pretoria.

is yielded by FG1*b* and FG2*b* while FG1*a* and FG2*a* give none. The pH of the fluids, determined in a Beckman pH meter, was:

| | |
|---|---|
| FG1a ... ... ... ... ... | 2.4 |
| FG1b ... ... ... ... ... | 1.0 |
| FG2a ... ... ... ... ... | 2.35 |
| FG2b ... ... ... ... ... | 0.9 |

The residues, after extraction with water at 20° and 50° C. (RG1 and RG2), together with the filter papers on which these residues were dried, are heated in distilled water for half an hour on a water bath. After cooling, the bright blue fluid is filtered off. Neither RG1*a* nor RG2*a* has any staining value. On the other hand, if these residues are heated in the same way for half an hour in 5% chrome alum solution, the resultant fluids are blue-violet in colour and, after cooling, a considerable precipitate is formed. This precipitate is also formed if the residues are first dissolved in boiling water and then again heated with the addition of 5% of chrome alum. The pH of the 2 fluids was 1.8 (RG1*b*) and 1.8 (RG2*b*).

For the staining of sections the following solutions were used:

| | |
|---|---|
| FG1a | FG2b |
| FG2a | RG1b |
| FG1b | RG2b |

Each corresponded with 150 mg. of gallocyanin per 100 ml. of the original suspension of the dye. Staining was allowed to continue for 24 and 48 hours. The results are presented in Table I, from which it is evident that the 'R' fluids are superior in staining capacity to the 'F' fluids.

Furthermore, variation of the pH of FG1*a* and FG2*a* between 1 to 6 produced no improvement in the staining qualities of either. Similarly, there was no improvement with FG1*b* and FG2*b* when the pH was varied between 1.8 and 4. In the case of these two a precipitate was formed when the pH exceeded 4. Increasing pH in the 4 'F' fluids results in a change in colour from blue-violet to violet. The change in colour is so gradual that the use of gallocyanin as a pH indicator, with a sharply defined turning point, seems impracticable.

The difference in staining quality between RG1*b* and RG2*b* is so slight as not to be noticeable in photomicrographs. Apart from less co-staining, the colour with RG2*b* is more brilliant. Extension of the staining period from 24 to 48 hours not only gives a deeper blue but brings out a larger number of small particles. RG2*b* gives greater colour brilliance, greater intensity of staining and sharper definition of the Nissl bodies than the original Einarson stain.

*Dye Extraction from Gallocyanin.* Gallocyanin is suspended in distilled water and extracted at 50° C. for half an hour. After cooling the fluid is filtered off and the residue plus filter paper heated in distilled water on a water bath. Every 15 minutes a sample is taken, cooled and filtered for colorimetric comparison in a Duboscq colorimeter. It was found that, after one hour's heating, the intensity of the colour, which is a beautiful blue, does not increase appreciably. It was also found that a considerable amount of the dye remains undissolved. It was decided to investigate the staining capacity of these 2 fractions.

Three hundred milligrams of gallocyanin were extracted in 200 ml. of distilled water at room temperature for half an hour. The resultant suspension was filtered and the violet-coloured filtrate discarded. The residue, together with the filter paper, was heated in 200 ml. of distilled water for one hour on a water bath. After cooling, the fluid (FfG3) was filtered off and made up to the original volume with distilled water. The fluid was divided into 4 portions of 50 ml., to each of which varying amounts of chrome alum was added, and all 4 were heated for an hour on

TABLE I: COMPARISON OF STAINING EFFECTS OF THE TWO FRACTIONS OF GALLOCYANIN

| *Stain* | *Intensity* | *Colour* | *Nissl Bodies* | *Co-staining* * |
|---|---|---|---|---|
| FG1a .. .. .. | Insufficient | Blue | Not well defined | Strong |
| FG2a .. .. .. | Insufficient | Blue | Not well defined | Strong |
| FG1b .. .. .. | Insufficient | Grey | Sharply defined | Nearly absent |
| FG2b .. .. .. | Insufficient | Grey | Sharply defined | Nearly absent |
| RG1b .. .. .. | Sufficient | Blue violet | Sharply defined | Slight |
| RG2b .. .. .. | Sufficient | Blue violet | Sharply defined | Nearly absent |

* The term co-staining, in this publication, means the staining of nerve fibres, karyoplasm and cytoplasm other than Nissl bodies.

the water bath. On cooling and filte · the pH was found to be:

FfG3 with 1% chrome alum p 2.4.
FfG3 with 2.5% chrome alum pH 2.1.
FfG3 with 5% chrome alum pH 1.9.
FfG3 with 10% chrome alum pH 1.7.

Sections, incubated for 24 hours in the abovementioned 4 solutions, showed extremely faint Nissl staining of an indefinite grey colour. We therefore draw the conclusion that either boiling destroys the dye or an inactive fraction of the original residue is extracted after boiling with distilled water, leaving the staining properties in the second residue. To control these conclusions, residue RG3 was boiled in 200 ml. of 5% chrome alum solution for half an hour. After cooling the fluid was filtered off and used for staining. It produced beautifully stained Nissl bodies with no appreciable co-staining.

A final residue is left after boiling residue RG3 with chrome alum. This can be completely dissolved in 2.5% NaOH solution. This is alkaline in reaction and has a violet colour comparable with cresyl violet. It can be acidified to pH 1 without forming an appreciable precipitate but if it is boiled with chrome alum, after so acidifying, a precipitate is formed. None of these 3 solutions, alkaline, acidified and acidified plus chrome alum, has any effective staining quality.

*Optimum Concentration of Chrome Alum.* Gallocyanin, 150 mg. per 100 ml. of distilled water, is heated on a water bath for an hour, cooled, filtered and the residue plus filter paper boiled in 100 ml. of distilled water to which chrome alum has been added. Three different solutions were prepared, the pH of all 3 being 1.64:

RG4 with 2.5% chrome alum.
RG4 with 5% chrome alum.
RG4 with 10% chrome alum.

Sections stained for 24 hours show that there is no significant difference in the staining capacity of the 3 fluids except that the nuclear membranes are not well stained in the fluid containing 2.5% of chrome alum.

*Influence of Length of Boiling Time.* Fifty milligrams of gallocyanin is suspended in 100 ml. of distilled water and filtered after 15 minutes. The filter paper is boiled in 100 ml. of distilled water for 15 minutes and the filtrate discarded. The residue plus filter paper is boiled in 100 ml. of distilled water for 30 minutes and filtered after cooling. The second residue plus the filter papers is boiled in 100 ml. of distilled water plus 5 g. of chrome alum. Every 30 minutes a sample is taken for comparison in the Duboscq colorimeter. Each sample was divided into 2 and readings 2 and 4 given by the 30 minute fraction were taken as the standard. The readings thus obtained indicate that boiling for a period shorter than 90 minutes is inadequate and that extension of the boiling time to 1½ hours has no advantage (Table II).

TABLE II: INFLUENCE OF BOILING ON EXTRACTION OF GALLOCYANIN RESIDUE.

| *Boiling Time (In Minutes)* | *Colorimetric Reading* | |
|---|---|---|
| 30 | 2 | 4 |
| 60 | 1·2 | 2·3 |
| 90 | 0·9 | 1·7 |
| 120 | 0·9 | 1·6 |

*Optimum Concentration of Gallocyanin.* The insoluble gallocyanin fraction is prepared and the residue boiled for 1½ hours with 5% chrome alum and 3 different solutions prepared:

RG6.300 containing 150 mg. of dye per 100 ml.
RG6.600 containing 300 gm. of dye per 100 ml.
RG6.900 containing 450 mg. of dye per 100 ml.

Sections were stained in these for 16 and 24 hours, the results indicating that RG6.600 gives a proper stain, RG6.900 a slight degree of overstaining and RG6.300 definite understaining.

*Influence of pH on the Staining Properties.* A gallocyanin solution containing 150 mg. per 100 ml. was prepared and divided into 2 portions, the pH of which was brought to 3 and 4 respectively. Sections were stained in each for 24 hours. The results show that increase in alkalinity results in co-staining in the cytoplasm, karyoplasm and fibres.

*Influence of Acid and Alkali after Staining.* After staining, sections have to be washed in order to get rid of the excess dye. This washing cannot be done in alcohol or acetone as these cause precipitation of the dye in the tissue. The excess of dye can be removed only with water. For this purpose water with a pH of 6 to 7 is used and fairly good results are obtained. If the staining is done at pH 1.6, the co-staining is very slight. It was felt, however, that the difference between the pH of the staining fluid and of the washing fluid was very great. As the co-staining depends partially on the pH (higher than 2), one can hardly expect to abolish co-staining with distilled water alone. Thus washing was done with distilled water, acidified with hydrochloric

acid to pH 1.6, and continued until no more stain came away in the washing water.

The result was no co-staining in the cytoplasm, karyoplasm and fibres, which were practically invisible. The slides washed with acidified distilled water were decidedly better than those washed with distilled water alone. The acidification of the washing water did not affect the intensity of the staining of the nucleus, nucleolus and Nissl bodies.

The influence of an alkaline washing medium was investigated by placing the sections for 30 seconds in 2.5% sodium hydroxide solution. The effect was remarkable for, even in that short period, all the dye was dissolved out of the tissues. This opens up the possibility of differentiation of overstained slides. This differentiation of overstained sections, although seldom necessary, may be accomplished by immersing the slides in a solution of sodium bicarbonate. With a saturated solution the colour intensity is considerably weaker after one minute. Sodium carbonate and sodium hydroxide are equally effective.

*Fading in Ultra-Violet Light.* Sections were stained for 24 hours at pH 1.64 in a gallocyanin-chrome alum solution from which the 2 water-soluble fractions had been removed. After mounting they were exposed to full daylight, with 8 hours of sunlight a day, for periods varying from 0 to 9 days. Although there is slight fading in the sections exposed for more than 3 days, this is not serious, especially if it is compared with the fading ordinarily seen under similar conditions in sections stained with aniline dyes.

*Proposed Procedure Preparation of the Dye Solution.* Six hundred milligrams of gallocyanin is shaken in 200 ml. of distilled water for a minute and filtered, the filtrate being discarded. The filter paper plus the residue are returned to the vessel in which a small amount of residue is still present. Two hundred millilitres of 5% chrome alum solution in distilled water is added and the vessel placed in a water-bath for 1½ hours. On cooling, the filtrate is brought to pH 1.6 with 1% hydrochloric acid.

After sections have been brought down to water they are stained for 24 hours, or longer if necessary (depending on the age of the solution). The sections are rinsed for 1 minute in distilled water, acidified to pH 1.6 with 1% hydrochloric acid. The rinsing is repeated with fresh fluid until no further dye can be removed. If counter-staining is desired, the sections are transferred to eosin solution. Finally, they are dehydrated and mounted.

## DISCUSSION

As is evident from Table 1, the second water-soluble fraction causes no measurable degree of co-staining and so there is no necessity to remove it. In some of our unrecorded experiments failure in the staining could be traced to partially decomposed chrome alum. It seems important, therefore, to use only such chrome alum crystals as have a dark, glossy appearance.

The same excellent results were obtainable with frozen sections, provided the tissue had previously been fixed in a fluid suitable for the fixation of RNA and DNA. The influence of fixing materials on the capacity of the tissue to absorb the stain will be reported in a subsequent paper.

## SUMMARY

1. A study has been made of Einarson's gallocyanin method for the specific staining of Nissl bodies.

2. The slight extent of co-staining, which is found even at a proper pH, can be prevented by removing a water-soluble fraction of the dye with cold water.

3. All traces of co-staining can be removed by washing the slides in acidified water, without in the slightest degree altering the brilliance of the staining of the nuclei, nucleoli and Nissl bodies.

## OPSOMMING

1. 'n Studie is gemaak van Einarson se gallosianienmetode vir die spesifieke bevlekking van Nissl-liggame.

2. Die geringe mate van mede-bevlekking wat aangetref word selfs met 'n behoorlike pH, kan voorkom word deur die verwydering van die in water oplosbare fraksie van die verfstof met koue water.

3. Alle spore van mede-bevlekking kan verwyder word deur die plaatjies in versuurde water te was. Dit verander geensins die helderheid van die bevlekking van die kerne, die kernliggaampies en die Nissl-liggaampies nie.

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## REFERENCE

Einarson .L. (1932): Amer. J. Path., **8**, 295.

## MEDICO-LEGAL SECTION

### ACTS SPECIALLY PERTAINING TO THE MEDICAL PROFESSION

### I: R. v. FRITZ (TRANSVAAL PROVINCIAL DIVISION)*

1953. *November* 23. RAMSBOTTOM and NESER, JJ.

In an appeal from convictions for contravening section 34 (*a*) of the Medical, Dental and Pharmacy Act, 13 of 1928, the evidence on each count showed that the complainants had visited the appellant for the purposes of non-supernatural treatment and cure, that there had been some kind of examination, that there had been a diagnosis, that there had been the prescription of medicine, and there had been the payment of money which completed the transaction. The appellant had claimed that he had an extraordinary supernatural power in the exercise of which he was able, by looking at a person, to look at the inside of his body as well as the outside and so determine what his malady was; having so determined, he proceeded to prescribe medicine.

*Held*, that appellant had rightly been convicted.

Appeal from a conviction in a magistrate's court. The facts appear from the reasons for judgment.

RAMSBOTTOM, J.: The appellant was charged with fraud on seven counts, or alternatively with contravening sec. 34 (*a*) of the Medical, Dental and Pharmacy Act, 13 of 1928 on seven counts; he was also charged on an eighth count with contravening sec. 37 (a) of the same Act. He was convicted on five counts of contravening sec. 34 (*a*) of the Act and was acquitted on the eighth count, namely of contravening sec. 37 (*a*). The magistrate did not find that fraud was proved, but he did find that, on the five counts on which he convicted, the appellant had contravened sec. 34 (*a*) in that, not being registered as a medical practitioner, the appellant had, for gain, performed acts specially pertaining to the calling of a medical practitioner. He sentenced the appellant to a fine of £20, and in default of payment to imprisonment with compulsory labour for one month on each of counts 2, 3 and 7; counts 5 and 6 were treated as one for the purpose of sentence and the same sentence was passed in respect of those two counts together. The appellant has appealed against his conviction on the merits, and also on the ground that the sentence is excessive. Mr. *Boshoff*, who appeared on behalf of the appellant, has not argued that the sentence was excessive, and quite rightly. It is obvious, I think, that the sentence is by no means excessive.

The question then is whether the appellant was rightly convicted on the five counts. The case for the Crown was that the appellant contravened the section by diagnosing and treating the persons who went to him for medical treatment. The magistrate did not find it proved that the appellant had held himself out as a qualified doctor or as a registered medical practitioner, but the case made against him was that people went to him for medical treatment, that he diagnosed and that he treated, and that he did so for gain.

The appellant himself, in his evidence at the trial, claimed that he had an extraordinary supernatural power in the exercise of which he was able, by looking at a person, to see through that person's clothing. He claimed that not only could he see through the person's clothing, but that he could see through the skin and flesh into the innermost parts of the body, so that he was able, merely by looking at a person, to ascertain exactly what was going wrong with the bodily functions, and, having thus observed, he was able to determine with great accuracy what was the matter with the patient and was then able to prescribe medicine which, in his opinion, would remedy the patient's complaint. According to him he did not find it necessary to use the aids to diagnosis which are used by less privileged medical practitioners who, being unable to see into the patient's body, are compelled to use instruments such as stethoscopes, for listening, or X-ray apparatus; he was able, so he says, to dispense with instruments or apparatus of that kind. He claims that he was able, by looking at a person, to look at the inside of his body as well as the outside and so determine what his malady was; having so determined, he proceeded to prescribe medicine.

His evidence on this point is summarized in the following passage from the record:

'As die persoon dan self na my kom, dan kyk ek na hom met daardie gawe wat ek het en gee hom dan medisyne. As 'n persoon dan aan iets ly kan hy my medisyne koop as hy wil. Daar kon 'n nou verwantskap wees tussen die sien van 'n persoon en die vasstelling van sy kwale en die medisyne wat ek hom dan verkoop. Die vasstelling van die kwale deur my gawe en die medisyne wat ek persoonlik verkoop staan in noue verband. Dit hang af wat

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ek aan hom sien deur my gawe, watter soort medisyne ek hom verkoop. Ek het 'n bestaan gemaak uit die medisyne wat ek verkoop.'

That is how the appellant himself describes the way in which he does his work.

The complainants on the various counts gave evidence as to what happened to them. Mrs. Schutte said that she was visiting a friend's house where she happened to meet the appellant, and she says:

'Toe ek beskuldigde by Mev. Keason ontmoet, het beskuldigde my gevra wat ek makeer en ek sê hom toe dat ek aan my hart ly. Ek was toe juis opgeswel gewees.'

She says that after that the appellant told her to get up from the bench on which she was sitting and to walk towards him where he stood on the other side of the table. She did that, and she says:

'Toe ek na hom toe loop toe sê hy: "O, ja, nou weet ek wat jou makeer". Hy sê toe dat ek aan 'n senu hart ly. Dit is na ek na hom toe geloop het soos hy versoek het. Beskuldigde sê toe aan my dat as ek hom £5 betaal hy my sou gesond maak. Ek het hom toe vertel dat ek nie toe die £5 had nie daar ek 'n weduwee met vyf kindertjies is en self vir hulle moes werk. Beskuldigde sê toe dat as ek die £5 kry, hy na my huis sou kom en die goed saam bring.'

Later on she gave him £5 and he gave her two small bottles of medicine and three small packets of powder.

The first question is whether the Crown proved its case on this count. In my opinion the case was most clearly proved.

The law on the subject is not difficult, but its application is not always easy. The matter was dealt with by SIR JAMES ROSE INNES in *Greene* v. *Rex*, 1905 T.S. 595. In that case there was medical evidence as to what acts 'specially pertaining to the calling of a medical practitioner' or 'specially belonging to the calling of a medical practitioner', which were the words of the Ordinance which was then being applied, amounted to. After hearing the evidence the learned CHIEF JUSTICE said:

'The Ordinance evidently intended to prohibit the doings of things specially belonging to the medical calling by unqualified persons, even though there might be no proof of general or continuous practice as a physician. No doubt Dr. Turner was correct in suggesting that the duties of a medical man fall generally under three heads: he diagnoses the malady, he advises the patient, and he prescribes for the complaint. But it does not follow that these three acts are present in the same proportion in every instance. That depends upon the nature of the case. Nor does it seem to me that a layman who diagnoses or advises or prescribes necessarily on that account infringes the Ordinance. Otherwise no friend could advise another in regard to the most trifling complaint, or supply him with even the simplest remedy. To give these acts the characteristic referred to, that is to say, to constitute them acts specially belonging to the calling of a medical practitioner, they must be done as a matter of business—as a doctor would do them, for payment or reward. The whole scope of the section shows, to my mind, that that element is necessary to constitute a contravention. It is only when acts which constitute the treatment of disease are done as a matter of business that they specially belong to the calling of a medical practitioner.'

That statement of the scope of the section (the section in the present Act being substantially the same as that of the Ordinance which was under consideration in *Rex* v. *Greene*) has been consistently followed and applied in all Provinces of the Union, including the Appellate Division.

In *Rex* v. *Bezuidenhout*, 1922 A.D. 206, SIR JAMES ROSE INNES said:

'It was pointed out in *Greene* v. *Rex*, 1905 T.S. 595, that the duties of a medical man fall under three heads—diagnosis, advice and prescription. But it was also pointed out that to constitute the statutory offence it was not sufficient to show that the act performed fell under one or other of the above categories; it was necessary to show further that it had been done as a matter of business, that is, for payment or reward. There advice had been given and medicine supplied and paid for, and the test applied was whether that advice was a substantial portion of the whole transaction in respect of which payment was made. The principles laid down in *Greene's* case have been followed and approved in subsequent decisions'—

which are then quoted—

'and the present inquiry may, I think, be approached on the same lines.'

If the tests laid down in *Greene* v. *Rex* and *Rex* v. *Bezuidenhout* are applied to the count in which Mrs. Schutte is the complainant, I have no doubt that the Crown proved that the section had been contravened. She saw the appellant who asked her what was the matter with her, in a physical sense; she told him that she suffered from her heart; he then told her to walk, and apparently observed her while she did so; when she had done what he had told her, he diagnosed her complaint and said, 'O ja, nou weet ek wat jou makeer; jy ly aan 'n senu hart'. There was an act of diagnosis. That was followed by an offer of treatment—'Beskuldigde sê toe aan my dat as ek hom £5 betaal hy my sou gesond maak'. It is quite clear from that that the payment of £5 was to be payment for treatment, it was not merely the sale of a bottle of medicine for the price of £5. We have then on this count a diagnosis and a treatment. As the magistrate has pointed out in his very full and able judgment, the disparity in the cost of the medicine and the price charged leads one to the conclusion that the sum charged included a reward for the diagnosis and that it was not merely the price of the bottle of medicine.

Mr. *Boshoff* has contended that what the appellant did does not amount to a contravention of the section because he did not use any scientific knowledge or any of the scientific aids to diagnosis which a doctor uses and, therefore, did not perform any act such as a doctor would do, and he has maintained that unless a person does the things which a doctor would do he does not contravene the section. He has quoted a number of cases which, he says, support his contention. I do not think it necessary to consider those cases. We are bound by the decision in *Rex* v. *Greene,* and also, of course, by the decision in *Rex* v. *Bezuidenhout,* and to my mind those cases make it perfectly clear that what we have to do is to see whether the person charged was diagnosing and treating in a medical sense. If a man goes to a witchdoctor and seeks the aid of witchcraft the witchdoctor does not perform any of the functions of a medical man; consequently, although he may contravene a statute prohibiting witchcraft, he does not contravene an Act which prohibits a non-registered person from performing the acts of a medical practitioner. But in this case there is diagnosis, there is examination of one kind or another, and there is treatment; and that is all done for reward. It seems to me that the fact that the diagnosis did not involve the use of a stethoscope or the feeling of the pulse or of any other recognized aid to diagnosis is not relevant.

The argument that in diagnosing some act must be done of the same kind that a doctor would do is based upon the phrase used by SIR JAMES ROSE INNES in *Green* v. *Rex,* namely—

'they must be done as a matter of business—as a doctor would do them for payment or reward'.

But it is clear that, when using those words, the learned CHIEF JUSTICE did not intend to say that a person could only infringe the statute by doing the kind of things in the course of his diagnosis that an ordinary doctor would do. No doubt different doctors have different methods of diagnosing—some may make use of scientific apparatus to a larger degree than others; some may use their powers of observation more than others; it is not the method of diagnosis that is so important as the act of diagnosis. What the learned CHIEF JUSTICE meant when he used the words 'as a doctor would do them' was 'for payment or reward', 'as a matter of business'. That was made perfectly clear in *Bezuidenhout's* case where the learned Judge said: 'It was necessary to show further that it (i.e. the act complained of) 'had been done as a matter of business—for payment or reward'.

This point was dealt with by FAGAN, J., in the case of *Rex* v. *McKenzie,* 1944 C.P.D. 368, the case quoted by the magistrate in his judgment. The learned Judge there dealt with the meaning of the phrase 'as a doctor would do' used in *Green's* case, and said:

'Mr. *Schoch* stressed the argument that what he did by means of the paper was not "diagnosis", it was not the kind of examination that a medical practitioner would make. True, one would not expect a qualified medical practitioner to inquire into the nature of a complaint in that particular way. But it is the act of inquiring into the complaint, not the manner of doing it, which, if the other elements indicated by INNES, C.J., in the passage I have quoted are present, is something specially appertaining to the calling of a medical practitioner. In *Rex* v. *Bezuidenhout,* 1922 A.D. 206 at p. 209, INNES, C.J., said: "Turning to the circumstances of the present inquiry, it is clear that the appellant not only supplied the medicine, but diagnosed the complaint. His activity in that direction was doubtless of little or no value, but that cannot help him. He purported to investigate, as a doctor would do, the nature of the ailment of which the Native complained; and if on either or both of the two occasions the diagnosis formed a substantial part of the transaction in respect of which payment was made, then he was guilty of contravening the Ordinance."'

FAGAN, J., then continued:

'I do not read the words "as a doctor would do" in this quotation to mean that the person charged must have diagnosed by a method which a qualified medical practitioner would have used. I take the phrase "as a doctor would do" in this context to mean "a thing which a doctor would do" not "in the way in which a doctor would do it".'

With that I respectfully agree save that I think that 'as a doctor would do' means 'as a matter of business and for gain', which was the context in which the words were originally used. The fact that the appellant used an unusual method of diagnosing, therefore, does not make any difference provided that what he was doing was to diagnose and, thereafter, to treat, and provided also that he did that for gain.

In the case of Mrs. Schutte, I have already said I think that the Crown clearly proved that there was diagnosis and treatment, and that the money was paid not only for the medicine which was supplied but also for the diagnosis and treatment.

It was contended that the appellant committed no offence because he had the right to sell medicine—he had a licence to sell medicine. Chemists and general dealers are also entitled to sell medicine, but they are not entitled to diagnose. If a person goes to a chemist and says, 'I have a cold, have you any cold remedy?' the chemist may recom-

mend and sell. But that is merely selling a commodity which the customer asks for. That is not the case here. Mrs. Schutte did not go to the appellant and say, 'Will you sell me some medicine for my heart?' He diagnosed, and, having diagnosed the particular ailment from which she was suffering, he said: 'I will give you medicine for that.' It was he who determined the medicine and not she. In my opinion that count was clearly proved.

The next count was the count in which Mrs. Pretorius was the complainant. She says that she went to the place where the appellant carried on his business, and after waiting some time she was ushered in. Presently the appellant came in. She describes how he was dressed. Her evidence then continues:

'Beskuldigde sê my toe ek moet sit, my hoed en brille afhaal en op tafel sit. Beskuldigde het toe naby my kom staan, my oë oopgetrek en daarin gekyk. Beskuldigde het my uitgevra eers waaraan ek ly en toe sê hy vir my dat ek meer water as bloed in my liggaam het. Beskuldigde vra toe of my voete en hande swel en ek het bevestigend geantwoord. Hy het my verder baie uitgevra oor hoofpyn en so aan en toe sê hy ek ly aan armoede van bloed, rumatiek en dat ek 'n trek op die krop van my maag had. Hy het ook gevra hoe eet ek, slaap ek en of ek gou kwaad word. Ek het gesê dat ek sleg eet. Beskuldigde het my toe een of twee bottels medisyne gegee, pille en poeiers—ek dink drie soorte pille. Sy verpleegster het my daarna verduidelik hoe om die medisyne te gebruik. Voor ek my medisyne gekry het, het beskuldigde my gesê dit kos £5. Ek het dit neergesit en beskuldigde het dit gevat en in sy sak gesit.'

This woman subsequently returned to the applicant and she was given further medicine at a slightly reduced price. On a third visit he felt her knees and asked if they were still sore. Referring to that visit the complainant said:

'Ek het hom vertel dat dit nog seer was, en dat ek daarom hom weer kom spreek het. Beskuldigde het gesê dit sal wel regkom. Beskuldigde het my toe weer medisyne gegee en ek het beskuldigde £3 10s. daarvoor betaal.'

It is clear that he inquired from this woman what her symptoms were. Having done so, he diagnosed her complaint; he told her that she was suffering from poverty of the blood and rheumatism. And he prescribed a medicine which he sold to her, giving her, through his nurse, directions as to how to use it. In this case, too, there is no doubt that the money which was charged was charged not only for the medicine but for the whole of the treatment.

The third count upon which the appellant was convicted related to a Native called Albert Matsei and his wife Agnes. Albert took his wife to see a person whom he thought was a doctor. That was the appellant. The method of diagnosis was described by Albert as follows:

'Na ek beskuldigde gesê het dat my vrou siek is, het beskuldigde haar gesê sy moet in die son kyk. My vrou het toe in die son gekyk en beskuldigde het so half voor haar gestaan en in haar oë gekyk. Toe sê beskuldigde dat sy aan bloed ly—dat haar bloed in haar kop in hardloop. Beskuldigde het haar toe medisyne gegee en ek moes daarvoor £5 betaal.'

Then the appellant, having diagnosed the trouble and the complaint from which the wife was said to be suffering, turned to the husband, who had regarded himself as being in perfect health, and told the husband that he was also suffering from the same trouble—that his wife had infected him and that he had bad blood. The complainant describes it in this way:

'Na beskuldigde gesê het my vrou se bloed verkeerd was, het beskuldigde vir my ook gesê om in die son te kyk en ek het dit gedoen. Terwyl ek in die son gekyk het het beskuldigde vir my gesê dat my bloed ook sleg was. Hy het gesê dat my vrou se slegte bloed my ook aangetas het. Hy het gesê dat, as ek gesond wou word, my medisyne my £4 10s. sou kos.'

Five pounds was paid for the wife and £4 10s. for her husband. The wife received no benefit from the medicine, and the husband took her back to see the appellant. She was again told to look into the sun and she was told that she was 50% cured. Further medicine was prescribed and another £4 was charged.

Here again it is the same picture: Diagnosis, treatment, charging. In this case too I think that the magistrate was perfectly right in convicting the appellant. He regarded the two acts as one for the purpose of sentence, but they were in fact two separate contraventions of the section.

The last count upon which the magistrate convicted the appellant related to one Swanepoel. Swanepoel had heard of the appellant and went to see him. He says that there was a picture hanging on the wall and the appellant said that he must look at the picture closely. He says:

'Ek het gesit terwyl ek daarna kyk. Na 'n ruk sê beskuldigde vir my dis genoeg. Beskuldigde sê toe vir my ek het baie pyn in my linker been en dat regter been tekens aan het maar dat dit nie seer was nie. Ek het toe bevestig dat linker been seer was. Beskuldigde sê toe verder dat ek kanker op my maag het. Ek was verbaas om dit te hoor omdat ek nog nooit aan my maag gely het nie. Ek moes vir omtrent vyf of ses tellings na die portret kyk. Nadat beskuldigde my vertel het van die pyn in been en merke en kanker, sê beskuldigde dat hy my goed sou gee om my te genees. Beskuldigde het gesê dit sou my £5 kos. Beskuldigde het die £5 van my geneem en toe is hy weg. Daarna het 'n dame vir my medisyne gebring.'

There is the same picture—a diagnosis, a treatment and a charge, the charge quite clearly in this case, as in the others, being a charge for diagnosis, for treatment and for medicine.

There is only one thing more I have to say, and that is in regard to Mr. *Boshoff's* argument that witchcraft or the exercise, pretended or otherwise, of supernatural powers are not acts falling within the section. In that regard it need only be said that there is no evidence that the appellant informed any of the complainants that he was exercising or purporting to exercise supernatural powers or a divine gift; he was treating them not by faith healing or in any supernatural way but by the administration of ordinary medicines. It is true that he called these 'Duitse medisyne' and made various representations about them, but in fact it was ordinary medicine which he bought from a chemist. If a man visited a person who claimed to be able to exercise witchcraft or supernatural powers, and if such person purported to be exercising supernatural powers and not to be exercising the ordinary processes of healing which a doctor uses, namely the prescription of medicine, the case might be different, but in this case there is no evidence that any of the complainants was told that supernatural powers were being exercised or thought that he was being cured by the exercise of such powers. In each case the evidence which I have read shows that the complainants visited the appellant for the purposes of ordinary non-supernatural treatment and cure; in each case there was some kind of examination, in each case there was diagnosis and in each case there was the prescription of medicine—medicine chosen not by the patients but by the practitioner who was advising them—and in each case, of course, there was the payment of money which completed the transaction.

In my opinion the magistrate was perfectly correct in convicting the appellant on the five counts upon which he was convicted, and consequently the appeal is dismissed and the convictions and sentences are confirmed.

NESER, J., concurred.

OPSOMMING

Wanneer 'n persoon wat nie as mediese praktisyn geregistreer is nie, ondersoek, diagnoseer en menslike kwale behandel vir wins, maak hy hom skuldig aan 'n oortreding.

Dit maak nie saak as sy ondersoek, diagnose en behandeling nie wetenskaplik is nie. Sulke dade—hoe belaglik hulle ook al uitgevoer word—is mediese dade as hulle met die oog op wins onderneem word, en is 'n oortreding van art. 34 (*a*) van Wet 13 van 1928.

## II: REX v. WINBERG (ORANGE FREE STATE PROVINCIAL DIVISION)*

1941. *March* 7, 20. VAN DEN HEEVER and DE BEER, JJ.

The test whether an act is one specially pertaining to the calling of a medical practitioner in terms of section 34 (*a*) of Act 13 of 1928 is not that it is one that nobody other than a medical practitioner can perform, as, though there is no reason why a medical practitioner whose name has been removed from the register of medical practitioners should be less skilled after than before such removal, the Act clearly contemplates that, by persisting in practice, he would render himself criminally liable. An act pertains specially to the calling of a medical practitioner when it is one which can only with propriety be performed by a doctor—namely, diagnosis, advice and prescription or operation, and no such act may be performed by a chiropodist, who is not registered as a medical practitioner.

Where payment is made for a series of acts of which diagnosis and advice were substantial portions, they are performed for gain in terms of the section.

*Per* DE BEER, J.: When diagnosis has taken place and this is followed by treatment, there has been a contravention of the section.

*Dictum* by WESSELS, J.A., in *Lymbery* v. *Jefferies* (1925, A.D. at p. 244) in regard to X-ray treatment, and *Rex* v. *Jay* (1933, S.A.L.J. 564), not followed.

As, save for the addition of such elements as treatment, the functions of the medical practitioner have in our Courts been consistently held to be those enunciated in *Rex* v. *Greene* (1905, T.S. 597) up to the passing of Act 13 of 1928, it is not irrational to suppose that those were the acts which Parliament had in mind as specially belonging or specially pertaining to the calling of a medical practitioner.

VAN DEN HEEVER, J.: Appellant was convicted before the magistrate at Jacobsdal on six counts of contravening sec. 34 (*a*) of Act 13 of 1928. The charge, in so far as it is relevant, alleged that 'for gain he practised as a medical practitioner or performed acts specially pertaining to the calling of a medical practitioner'. After conviction the accused's attorney held the magistrate to the election, who recorded his finding that the accused, not being registered, had for gain performed acts specially pertain-

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ing to the calling of a medical practitioner. In these circumstances I think we have the power to correct the magistrate's finding, if wrong, without disturbing the conviction, as accused had joined issue on the alternative and had, throughout the trial, to contend with both allegations.

The magistrate's findings on the facts are not disputed and we are called upon to decide only the legal question whether the acts admittedly performed by the accused fall within the prohibition.

The accused, whose name is Winberg, was in the habit of heralding his advent to new fields by a bilingual circular advertisement under the name of 'Winn', for short, presumably, or for professional reasons. In the English version he calls himself a 'chiropodist by profession', in the Afrikaans, a 'voetdokter'. In his oral testimonials he sometimes styled himself a 'specialist'. In his advertisement he says, after promising permanent cures: 'With every foot ailment you will have an asset, as you will be able to get up and walk immediately afterwards with ease.

'Having many years' experience I can assure you that all patients treated by me will have perfect relief and comfort.

'No extra charges for attending you at your home. All consultations free.'

These facts are, of course, not pertinent to the charge of performing acts specially pertaining to the calling of a medical practitioner but are certainly relevant to the alternative charge of practising as such. So also is the fact that in one instance (4th count) the accused originally charged ten guineas for his treatment and advice and reluctantly reduced the fee to six guineas, protesting that after all he was a specialist and that another specialist would easily have charged twenty guineas.

In each case bar one the patient informed the accused that he or she was suffering from some bodily ailment or disability such as callouses, corns, bunions, deformed feet, deformed arms. In each case the accused examined the part affected by viewing and manipulation. In five instances the accused diagnosed a defect or cause of defect other than that suggested by the patient; his favourite diagnosis was flat feet or fallen arches. In one case (4th count) the patient made no suggestion as to the nature of her ailment and the accused diagnosed flat feet. In several cases the diagnosis was obviously a device to extract additional fees from a patient who had already agreed to submit to treatment for the removal of corns or callouses. In those cases in which a diagnosis was not made in conflict with the patient's complaint the latter's opinion was confirmed by the accused. In each case the accused after examination advised the patient, sometimes the advice was formally given, sometimes it was implicit in the diagnosis and treatment; for example (1st count) 'the big toe is out of position, it must be pressed back'. In each case there was treatment such as manipulation and pressure, bandaging, application of ointment, soaking in medicated water, operations in three instances with a scalpel, drawing blood in two instances. In each instance there was a charge ranging from five shillings to six guineas.

Mr. *Horwitz's* first contention was that the accused did not perform acts specially pertaining to medical practitioners, but those pertaining to a chiropodist. He contends that sec. 32 of Act 13 of 1928 recognizes classes of persons, other than medical practitioners, dentists or chemists, who may legitimately treat physical defects or disease in man. Before such persons become registrable they may freely perform the acts pertinent to their calling, though not registered.

I find no support for that contention in the section. In the first instance I find no enabling words in the section other than those relating to a domestic function of the Council, i.e. the examination and registration of persons. The section does not even contemplate that such persons would engage in the treatment of defects and disease in man—it clearly contemplates an indirect association of such persons with the function of treating defects and diseases. The expression 'other classes of persons . . .' must bear a connotation *eiusdem generis* as dental mechanicians, sanitary or health inspectors, meat or food inspectors, health visitors, and they are conceived as engaged not in the treatment of disease, but in matters related to such treatment.

Apart from this section, of course, it may well be that classes of persons such as opticians and therapeutists may lawfully practise their professions. Opticians do not cure or directly relieve human ailments. They supply mechanical and external devices in aid of defective vision. If for gain they overstep the proper limits of their profession and encroach upon that of the medical profession, they contravene the law. I do not at all concede the necessity of construing the provision in regard to the functions of a medical practitioner in such a manner as to exclude therapeutists. If they are unqualified as medical practitioners and nevertheless perform prohibited functions for gain,

they commit offences. If exceptions have been made in their favour it may be that the Courts have drawn the fangs of the statute contrary to the expressed intentions of Parliament. We are not concerned with opticians or therapeutists in this case; so they cannot be allowed to confuse the issue. To my mind, however, that argument does not lead us anywhere; it merely means that all acts in connection with human ailments are not forbidden to unqualified persons but only such as are embraced in the term 'practising as medical practitioner or acts pertaining to the calling of a medical practitioner'. If the act falls within the description it seems to me an unqualified man cannot perform it with impunity by inventing some Greek, hybrid or fancy name for his profession. This point can be dealt with in connection with another raised by Mr. *Horwitz,* namely that the conviction is bad in that no evidence was led to prove what acts specially pertain to such calling. In support of this contention Hr. *Horwitz* cited several decided cases in which it has been held that the *onus* is on the Crown to establish that the act complained of falls within the description. I do not think the propostion can be questioned, but I do not take it to mean that in every prosecution under this section expert evidence has to be led as to the acts contemplated by the Legislature; what is meant is that the Crown must prove that the accused has performed an act which is embraced in the prohibition. The purpose of the Act is primarily the protection of the public, not of the medical profession. Had the object been the latter, Parliament may conceivably have entertained the notion of a number of acts, varying from time to time according to the exigencies of the profession, which are reserved for the members of that profession exclusively. As the object was primarily the protection of the public, Parliament must have contemplated some static notion, not liable to change according to the whims or interests of the profession.

Act 13 of 1928 was a consolidating measure and the intention of Parliament must be gathered from the words used in the light of statutes previously in force and their interpretation by the Courts.

Our section in so far as it affects this case follows fairly closely the expressions used in sec. 39 of Transvaal Ordinance 29 of 1904 (and of the corresponding Cape measure). It added the words 'for gain' obviously because of the limitations put upon the prohibition by judicial interpretation. The expression 'acts specially belonging to the calling of a medical practitioner' was construed in *Greene* v. *Rex* (1905, T.S. 597) as follows: 'He (the medical practitioner) diagnoses the malady, he advises the patient, and he prescribes for the complaint.' In that case there had apparently been medical testimony as to the nature of such 'belonging' acts.

INNES, C.J., did not treat it as one usually does such evidence; he enlarged upon it: 'But it does not follow that these three acts are present in the same proportion in every instance. That depends upon the nature of the case;' because he was not merely determining a fact but fathoming the intentions of Parliament. Save for the addition of such elements as treatment, the functions of the medical practitioner have in our Courts been consistently held to be those enunciated in *Greene's* case up to the passing of Act 13 of 1928. It is not irrational to suppose therefore that those were the acts which Parliament had in mind as specially belonging or specially pertaining to the calling of a medical practitioner.

Accused did not content himself with merely removing corns and callouses. It was suggested that he performed acts specially pertaining to the profession of a chiropodist, which cannot in consequence pertain specially to the calling of a medical practitioner. For this proposition reliance was placed on decisions such as *Lymbery* v. *Jefferies* (1925, A.D. 236) and *Rex* v. *Jay* (T.P.D. 1933, S.A.L.J. 564).

A full report of the judgment in *Jay's* case is unfortunately not available, for opinions of the members constituting that Court are worthy of great respect. From the précis available it would appear that the accused faced a charge identical with the one with which we are concerned. He was not a registered practitioner. He examined patients, diagnosed complaints and gave a treatment which he described as 'arterial pressure'. It was held on appeal that the treatment described as 'arterial pressure' could not be said to constitute acts specially pertaining to the calling of a medical practitioner, but seemed to amount to a kind of massage. It was held further that the diagnosing and the further acts of accused which did pertain specially to the calling of a medical practitioner did not form a substantial part of the work for which the accused was paid but were merely subsidiary acts for which the accused made no charge. Now obviously the accused in that case must expressly or by implication have advised his patients to submit to his treatment, otherwise, it would be inconceivable that they should have done so. As to

the actual treatment, the Legislature prohibited a certain function, not the instrument or agency with which it is performed. If for gain I diagnose kidney complaints and offer to cure them by a brand-new process, say by cauterizing the skin over the region of the kidneys, accompanied by massage of the lobes of the ears, it seems to me no defence to say that no qualified medical practitioner in his sober senses would essay to effect a cure in that manner. I could conceivably argue that by doing so I was performing acts pertaining to the calling of an abracadabrist or a hermetic paracelsian and not to that of the medical profession. I would nevertheless be performing a function from which the Legislature precluded me. The success of such an argument would put a premium on quackery, for the more fantastic the treatment the less chance there would be of classing it with acts pertaining to the medical profession.

In *Lymbery* v. *Jefferies* (1925 A.D. at p. 244) WESSELS, J.A., seems to support Mr. *Horwitz's* contention. In that case a doctor was sued for damages by a patient who had been burned by an unqualified person to whom the doctor had sent her for X-ray treatment. Plaintiff's contention was that, as the radiographer was unqualified, he must be deemed to have been the doctor's agent. The evidence showed that burns were rare where the treatment was properly carried out and was often due to some idiosyncrasy on the part of the patient which cannot be foretold; that the radiographer was competent and employed by all the local doctors. No specific act of negligence was brought home to the radiographer, or alleged. Now surely the question of agency was relevant only in so far as the defendant's responsibility for another's negligence was concerned. The mere fact that the radiographer was not qualified would not in such circumstances support a claim for damages. A causal connection would have to be established between his inexpertness and the injury. The trial Court had held that no negligence had been brought home to the radiographer, and the Appeal Court saw no reason to differ in that respect. Under these circumstances the *dictum* of WESSELS, J.A., to the effect that a radiographer in giving X-ray treatment does not perform an act which specially belongs to the calling of a medical practitioner, was not necessary for the decision of that case. Apparently, too, the Court did not appreciate the nature of radiation; WESSELS, J.A., repeatedly refers to the treatment as 'electrical treatment'. Appreciation of the fact that, in X-ray therapy, radiation, whether excited by electricity or otherwise, may cut more deeply and irreparably than the surgeon's knife, would I think, have led to the conclusion that the true test was one of function and not of the instrument employed.

But what is meant by the word 'specially'? That word already stood in the Transvaal Statute when *Greene's* case was decided. Appellant placed reliance on a *dictum* which we find repeated in the cases; for example in *Rex* v. *Smith* (1917, T.P.D. 208) DE VILLIERS, J.P., says: 'It is clear that the *onus* is on the Crown to prove that only medical practitioners, and nobody else, can perform such acts. For if not they cannot specially belong to the calling of a medical practitioner.' Obviously the test was not intended to be whether in fact a person other than a medical practitioner could perform the act; there is no reason why a practitioner whose name has been removed from the register should be less skilled after than before such removal, yet the Act clearly contemplates that by persisting in practice he would render himself criminally liable. We know that ships' captains have in cases of emergency performed operations for appendicitis. Can it be held consequently that such operations have ceased to be acts specially pertaining to the calling of a medical practitioner and may now be performed *lippis et tonsoribus?* Surely what was meant by the *dictum* was that such acts could with propriety be performed only by medical practitioners. Doctors as well as nurses may dress a wound, take a temperature, but to diagnose, advise and prescribe or operate are functions properly performed only by doctors.

Mr. *Horwitz* replied that ships' captains do not operate for gain. This idea seems to be supported by WESSELS, J.A., in *Lymbery* v. *Jefferies* (1925, A.D. at p. 244), where he says: 'If the section is interpreted narrowly it may prevent a person from alleviating the sufferings of his neighbour by advising the use or administering some household remedy, or it might even prevent the administering of first aid; if interpreted too widely, it may open the doors to quackery . . . we have therefore to adopt some middle course.' With respect, this is a legislative consideration. Moreover, the Courts had already held that the section could be contravened only by those who performed such functions for reward or gain. The Union Act has now expressly incorporated that element. It is an additional consideration which determines whether the same act is innocent or guilty, but I fail to see how it

can affect the nature of the act. In itself that consideration cannot guide us in determining whether an act specially pertains to the calling of a medical practitioner or not. Quite apart from the question of gain there must be a test to determine which acts specially pertain to that calling; so that we return again to the notions: diagnosing, advising, prescribing or operating.

To apply these tests then to the accused's conduct. In each case he diagnosed, he advised that his treatment be submitted to, he operated, bandaged and manipulated. He charged a comprehensive fee. I am satisfied from the record that the charge in each case was not only in respect of his physical labour but also for his impressive diagnosis and manipulation. As a matter of fact it was really the diagnosis which fetched the money out of his patients' pockets. His assertion that those acts which fall within the prohibition were performed without reward (as stated in his circular) cannot in itself be an excuse. One has to infer from the circumstances what the true situation was; the legendary device of donating the proceeds of the sale of a horse to the church and then selling the horse with bridle complete, the horse for a pound, the bridle for twenty, will not always ensure safety. Payment was made for a series of acts of which diagnosis and advice were substantial portions. On the 4th and 5th counts it would have been more correct if the verdicts had been recorded as practising for gain as a medical practitioner. I cannot see, however, in what way the accused could be prejudiced by the verdicts found, and I am not at all sure that the accused is entitled as of right to such specification.

In my opinion the appeal should be dismissed.

OPSOMMING

Die toets of 'n daad een is wat, kragtens artikel 34 (*a*) van Wet 13 van 1928, spesiaal betrekking op die beroep van 'n mediese praktisyn het, is nie dat dit 'n daad is wat deur niemand behalwe 'n mediese praktisyn uitgevoer kan word nie.

'n Daad het spesiaal betrekking op die beroep van 'n mediese praktisyn wanneer dit 'n daad is wat met welvoeglikheid slegs deur 'n dokter verrig kan word—naamlik, diagnose, advies en voorskryf of operasie, en geen sodanige daad mag deur 'n voetkundige wat nie as 'n mediese praktisyn geregistreer is, verrig word nie.

## PREPARATE EN TOESTELLE

### LEDERLE SE ACCOGEL-KAPSULES

Die onlangse ontwikkeling in die Lederle-laboratoriums van die Accogel-masjien vir die produksie van Accogel-kapsules is van aansienlike belang vir geneeshere. Dit is 'n eksklusiewe Lederle-proses wat die enigste verseëlde, drooggevulde kapsules wat vandag verkrygbaar is, beskikbaar stel.

Baie van Lederle se ingekapselde produkte word tans in hierdie nuwe soort drooggevulde kapsules aangebied.

Die drooggevulde kapsule besit talle voordele. Die inhoud van die kapsules word vinniger geabsorbeer omdat daar geen olie aanwesig is wat die absorpsie in die liggaam kan belemmer nie. Kliniese toetse het bewys dat drooggevulde Achromycin-kapsules 'n hoër bloedpeil tot gevolg het. Die olievrye kapsules word deur pasiënte verkies omdat hulle geen onaangename nasmaak het nie.

### NIPRIN: 'N NUWE PYNSTILLER

*Niprin* is 'n nuwe en doeltreffende pynstiller waarin daar gebruik van 'n samestelling van aspirien en niasien gemaak word. Die uitwerking daarvan is om die effek van aspirien te verhoog deur die vloeiing van serebrale bloed te verbeter en deur haarvatstase uit te skakel. Wat dit betref, is daar reeds op uitgebreide skaal verslag gedoen oor die kliniese werk in verband met niasien, en hierdie werk is deeglik gedokumenteer.

Met die oog op Niprin se perifere effek, is dit doeltreffend vir die behandeling van senuweepyn, senuwee-ontsteking, rumatiekagtige toestande, en die spanning wat die maandstonde voorafgaan. Hierdie perifere effek van Niprin is dikwels dramaties, en daar word aan die hand gedoen dat daar aan die pasiënt verduidelik moet word dat hy moet verwag dat die bloed na die wange sal jaag, of dat 'n tinteling in die vel waargeneem sal word.

Die perifere vaatverwyding is van 'n verbygaande aard en nie onaangenaam nie, maar dit is raadsaam om die pasiënt die versekering te gee dat dit geen effek op die hart, die bloeddruk of die tempo van die pols het nie, dat Niprin bloot die vloeiing van die bloed verbeter, en dat hy kan verwag dat hierdie blosing die voorloper van bevredigende pynverdowing sal wees.

## PREPARATIONS AND APPLIANCES

### LEDERLE'S ACCOGEL CAPSULES

Of considerable interest to doctors is the recent development by Lederle Laboratories of the Accogel machine for the production of Accogel capsules. This is an exclusive Lederle process which offers the only sealed, dry-filled capsules on the market.

Many of Lederle's encapsulated products are now offered in this new type dry-filled capsule. The advantages of the dry-filled capsule are many. The contents of the capsules are more rapidly absorbed as there are no oils to impede absorption in the body. Clinical trials have proved that dry-filled Achromycin capsules produce higher blood levels.

The oil-free capsules are preferred by patients because they cause no unpleasant aftertaste.

### NIPRIN: A NEW ANALGESIC

*Niprin* is a new and effective analgesic, using a combination of Aspirin and Niacin. The rationale is to enhance the effect of Aspirin by improving cerebral blood flow and by removing capillary stasis. In this respect, clinical work on Niacin has been widely reported and well documented.

Due to its peripheral effect, Niprin will be found effective in the treatment of neuralgia, neuritis, rheumatic conditions and premenstrual tension. This peripheral effect of Niprin is often dramatic and it is recommended that the patient be told to expect a flushing effect or tingling of the skin.

The peripheral vasodilatation is transient and not unpleasant, but it is advisable that the patient be assured that there is no effect on the heart, blood pressure or pulse rate, that Niprin is merely improving the blood flow and that he can expect this flushing to herald the onset of a satisfactory analgesia.

## REVIEWS OF BOOKS

### SUBPHRENIC ABSCESS

*Subphrenic Abscess.* By H. R. S. Harley, M.S., F.R.C.S. (Pp. 176. With 41 illustrations. 35s.). 1955. Oxford: Blackwell Scientific Publications Limited.

This is a study of 188 cases of subphrenic abscess treated by a number of surgeons at London teaching hospitals and special chest hospitals, and critically analysed by the author. The whole concept has been simplified both anatomically and in treatment, and many obscurities clarified. Intraperitoneally, the liver and the lesser omentum are the two organs which have been found to separate upper and lower subphrenic abscesses on each side. The right anterior and posterior compartments have not been separable in practice and have been discarded. The abscess in the lesser sac is still called the left posterior infra-hepatic. The same two extraperitoneal compartments have been retained. The incidence of each type of abscess is given numerically, with a clear discussion, accompanied by lucid diagrams, of how pus tracks to each space. The theory of why pus rises from lower in the abdomen is explained by the suction action of the ribs in quiet inspiration when the diaphragm is relaxed; it is only a contracting diaphragm during deep or forcible inspiration that prevents this suction, and in peritoneal disease the diaphragm is usually inhibited.

The frequency of serous pleural effusions and empyemata, and the great likelihood of perforation of the diaphragm with or without bronchial fistula are noted. The methods of spotting these various occurrences are given simply, and a large number of good radiographs is presented with clear diagrammatic indications of the radiological findings for the benefit of the surgeon.

In treatment, the sequence of complications demonstrates the importance of keeping outside the serous cavities in the search for and drainage of the abscess. The author rightly condemns needling through the pleura, and also points out that drainage through the virgin pleura is apt to produce empyema, even if the diaphragm is well sewn to the chest wall beforehand, owing to the break-down of both adhesions and stitches. The operations he advocates, though not new, are explained simply, and in detail for each compartment.

The book is easy to read and, though necessarily repetitive, is interesting for its simplicity and constant reference to basic anatomy and physiology, and to numbers of actual occurrences. Every surgeon (whether general, abdominal or thoracic) should study this book, and it is possible that his mortality may approach that put forward as a maximum of 10% by the author. Especially in countries such as South Africa is this study important, since our incidence of subphrenic abscess of amoebic and hydatid origin is so much higher than in England and so much less amenable to antibiotic treatment. The book is also recommended to all candidates for higher surgical degrees as a model of clear thinking and exposition.

It is surprising that in so good a book there is no adequate index.

### GROWTH AT ADOLESCENCE

*Growth at Adolescence.* By J. M. Tanner, M.D., Ph.D., D.P.M. (Pp. 212 + xii. 1955. With 11 plates and 57 Figures. 32s. 6d.) Oxford: Blackwell Scientific Publications.

This is a thoroughly quantitative account of the changes occurring in the period of human growth and development which 'occupies more than a quarter of the average person's lifetime; yet, surprisingly, one searches in vain for a detailed description of the bodily changes in form and function which occur during it' (p. ix).

Dr. Tanner's monograph explores (with adequate statistical control) the spectacular spurts that occur at adolescence, thus providing a useful base-line for physicians concerned with children and adolescents. He favours the 'longitudinal' as opposed to the 'cross-sectional' method of study and provides numerous illustrations of standards for rating bodily features in boys and girls. These should be particularly helpful to the clinician, especially when he is confronted with the important problem of apparent underdevelopment or obesity in the child round about the age of puberty.

Apart from the profound clinical interest which this volume evokes, it has also great medico-legal importance, since it reviews so ably the limits within which the 'normal' child or young person may be placed. The observations on lymphatic tissues make is quite clear that this tissue and the subcutaneous tissue are the only exceptions to the regular progression of spurts at this period. Tomographic studies confirm that thymic involution occurs at the time of the adolescent spurt, the maximal size of the thymus being reached at age 12 (or a little earlier) in girls and at age 14 (or a little earlier) in boys, with the decrease occurring in the following year in each case. The lymphatic tissue in other organs (spleen, intestine, appendix, mesenteric nodes) follows the thymic trend. Collateral evidence supporting this hypothesis is to be found in the behaviour of the

titre of the blood group agglutinins, whose manufacture (like that of other antibodies) appears to be related to the lymphatic system. Agglutinin titres follow the lymphatic curve during growth, being highest in the 5-10 age group, with a fall to the 10-15 age range. These data seem to lend some weight to the view that there may be such a phenomenon as the persistence of an enlarged thymus in young adults, associated with a liability to sudden death from trivial causes.

The difficult problem of correlating skeletal and chronological age is also illustrated, with a clear appreciation of the importance of sex. Girls, e.g. are more mature *at birth, before it, and throughout the whole period of growth*, a fact often overlooked by those who glibly determine the age of a foetus or a young person without regard to this important variable. Almost 'every pre-natal and post-natal appearance and fusion in the body' (p. 51) occurs earlier in girls and the phenomenon is also found in other primates and mammals. The importance of these facts cannot be overestimated when a child may be declared a prohibited immigrant on the basis of the radiological determination of its age.

Dr. Tanner's data also make it clear that malnutrition can retard skeletal development, as can high fat diets, whereas high protein diets can accelerate it. Climate and heredity may also exert an effect. Thus it becomes of fundamental importance to construct reliable tables for the different racial groups in a multi-racial population such as ours, and to avoid the serious error of applying 'white' criteria to the solution of 'black' problems.

Dr. Tanner's valuable monograph should attract the attention of physiologists, clinicians and biometricians, as well as of all those concerned with the application of the important data he has collected to the solution of a variety of forensic problems.

## THE YOUNG CHILD

*The Personality of the Young Child.* By Margaret A. Ribble, M.D. (Pp. 122. 1955. $2.75). New York: Columbia University Press.

In this short book the author has successfully provided simple explanations for many of the difficulties confronting the parent of the young child. More important, she shows these parents how to deal effectively with the problem situations.

It is one of the most suitable books on the subject to recommend to worried parents and the author is to be congratulated on her practical approach to these everyday issues With a wealth of experience behind her, she is able clearly to set out the normal development of the child in his early years, and to indicate how correct guidance and understanding can foster the healthy growth of the child's mind and personality.

## RECENT RESEARCH ON VITAMINS

*British Medical Bulletin: Recent Research on Vitamins.* (15s. per single copy. £2 per volume of 3 numbers, with Index). *Publishers*: Medical Department, The British Council, 65 Davies Street, London, W.1.

The January 1956 issue of the *British Medical Bulletin* was planned under the direction of the late Sir Edward Mellanby. It now takes the form of a memorial number to him, and fittingly so, for throughout his life his main scientific interests lay in the advancement of nutritional research and its application for the benefit of mankind.

The subject of vitamins has undergone much change since the early days of research, and the contributors admirably describe the progress that has been made, emphasizing the importance of studying vitamins in their relation to physiology and pathology as well as to the more purely chemical aspects. The complete structural formula of vitamin $B_{12}$, recently announced, is included in Dr. E. Lester Smith's paper. Other authors are Dr. Honor Fell, Prof. C. H. Best and his colleagues, Dr. Antoinette Pirie, Prof. L. J. Witts and Dame Harriette Chick. The effect of processing on the vitamin content of foods is discussed by Dr. L. W. Mapson.

*Vitamins in Nutrition: Orientations and Perspectives*, the epilogue to the symposium, has been written by Prof. B. S. Platt, who has also acted as Scientific Editor. The number is introduced by Sir Rudolph Peters, and is prefaced by an *Appreciation of Sir Edward Mellanby* by Sir Charles Harington, together with a portrait of Sir Edward.

Not only biochemists and others actively engaged in research on vitamins and the science of nutrition will wish to use this publication, but also medical officers dealing with problems of nutrition, and chemists concerned with the processing of food. The needs of tropical as well as of western countries have been kept in mind throughout the editing of the symposium.

## POLIOMYELITIS

*Poliomyelitis.* By Robert Debré *et al.* (Pp. 394 + Index. With Figs. £2). 1955. Publishers: World Health Organization, Geneva, Switzerland.

A new era in the study of poliomyelitis opened in 1949 with the discovery by Enders and his colleagues that the virus of poliomyelitis could be grown in cultures of living tissue. The profound significance of this discovery has gained world-wide recognition, culminating in the award of a Nobel Prize. Now, a little more than 5 years after this discovery, there are real hopes of finding practical and effective means of controlling the disease.

There is need to review the present situation in the light of the great mass of new information on poliomyelitis that has become available, partly to make accessible in one volume knowledge which is scattered in hundreds of papers in many different publications, and partly (perhaps more important) to see what remains to be done before the control measures now under intensive development can be successfully applied. The new WHO monograph *Poliomyelitis* is designed to fill this need. It contains comprehensive reviews of various aspects of poliomyelitis under 5 main headings: epidemiology, clinical aspects, virology, immunology, and control.

Those interested in the management of cases of poliomyelitis will find the latest information available in contributions by R. Debré and S. Thieffry, W. R. Russell and, particularly, H. C. A. Lassen, who describes the emergency management of respiratory and bulbar paralysis in poliomyelitis, viz. high tracheotomy with the introduction of an inflatable rubber cuff-tube, postural drainage with frequent aspiration of the airway, and manual ventilation

with a mixture of about 50% oxygen from a rubber bag. This emergency method made possible a reduction in the case fatality rate during a severe epidemic from 80% to about 30%, and has attracted the attention of many medical authorities.

The section on virology includes, appropriately, a review by J. F. Enders of the present status of tissue culture techniques in the study of the poliomyelitis viruses.

The papers on epidemiology, immunology and control will be of particular interest to public health workers. Immunization, the only approach to the control of poliomyelitis which gives any prospect of success, is the subject of 3 contributions, covering vaccination, immunization with living poliomyelitis virus and passive immunization against poliomyelitis.

Like the WHO monograph on influenza, this volume on poliomyelitis assembles valuable information on an interesting and complex subject, including the most important aspects of recent advances, by contributors of note—J. R. Paul (U.S.A.), J. Gear (South Africa), M. J. Freyche and J. Nielsen (WHO), R. Debré and S. Thieffry (France), W. R. Russell (England), H. C. A. Lassen (Denmark), S. Gard (Sweden), A. J. Rhodes, W. Wood and D. Duncan (Canada), J. F. Enders (U.S.A.), A. B. Sabin (U.S.A.), H. Koprowski (U.S.A.), W. McD. Hammon (U.S.A.) and A. M. M. Payne (WHO).

## CORRESPONDENCE

### TOURAINE'S SYNDROME

*To the Editor*: The article by S. Etzine and D. Ovedoff on *Touraine's Syndrome* (*Elastosis Dystrophica*), Vol. 2, No. 1, January 1956, is both interesting and informative.

In the discussion (based on 3 cases), however, I consider they have been too elastic! The *post hoc ergo propter hoc* reasoning that the myopia present in their cases is due to degenerate elastic tissue allowing the sclera to be distended by the intraocular pressure is not acceptable. Ocular pathologists have shown that the lesion in angioid streaks is in Bruch's membrane, and is associated with changes in the chorio-capillaris.

The clinical observation of haemorrhages and disciform degeneration without angioid streaks in some cases of elastosis dystrophica, suggests that the lesion is primarily a vascular one. The symptomatic and physical manifestations of the disease in other organs indicate a primarily capillary vascular disorder. Pathological changes in the elastic tissue of other portions of the eye are unusual. One would therefore not expect the sclera with a normal elastic tissue content to stretch because of a degeneration in the chorio-capillaris and lamina vitrea. Furthermore, should the elastic tissue in the sclera despite a seemingly normal histological and histo-chemical appearance be in fact abnormal, why only a low degree of myopia and not a severe and even progressive form?

In my own experience many chronic diffuse ocular lesions are associated with a variable degree of myopia. Most probably a long continued vasculocellular upset can result in a scleral softening and expansion.

Their remarks on blindness in Paget's disease are also apt to mislead. Elastosis can result in severely impaired vision. A total loss is most unusual. The commonest cause of blindness in Paget's disease is compression of the optic nerves by the bone changes constricting the optic foramina.

409 Medical Centre, E. Epstein, D.O.M.S.
Jeppe Street, Johannesburg.
3 February 1956.

### THE SOUTH AFRICAN PAEDIATRIC ASSOCIATION: PAEDIATRIC PRIZE ESSAY FOR 1956

*To the Editor*: The subject for this Prize Essay for 1956 is *The Problem of Rheumatic Fever in Children with Special Reference to its Local Incidence, Aetiology and Management.*

Entries may be submitted by fifth and sixth year medical students in South Africa. Two copies of the essay, which may be in English or Afrikaans and which must not exceed 5,000 words, must be forwarded typed in double spacing. The Prize is a bronze medal together with the sum of £10 for the purchase of books, instruments or subscriptions to journals.

If no essay of sufficient merit is submitted, the prize will not be awarded.

Entries should be forwarded to the undersigned.

F. Walt, M.R.C.S., L.R.C.P., D.C.H.,
*Honorary Secretary.*

South African Paediatric Association,
126 Trust Buildings,
Gardiner Street, Durban.
28 February 1956.

### ELASTIC TISSUE DEGENERATION IN THE EUSTACHIAN TUBE

*To the Editor*: Etzine and Ovedoff[1] recently described Tourine's disease as it effects the eyes, the skin and the arterial system. It is not an unreasonable possibility that this degeneration of elastic tissue, which is so widespread in this condition, would be manifest in an organ like the eustachian tube, which has an abundance of elastic tissue.

Recently Stacy Guild[2] clearly demonstrated the existence of extensive and dense bands of elastic tissue distributed throughout the walls of the eustachian tube. This important fact has been neglected for 50 years. He states that the density of elastic tissue is so great at the junction of the medial and lateral tubal walls, as to give the appearance of a dense cap. There is a mucosal abundance of elastic tissue in the lateral tubal walls, which have a membranous structure and are mobile. The function of this elastic tissue is twofold:

1. It counteracts the action of the tensor veli palatini, which separates the eustachian tubal walls to create a lumen;

2. Closure with apposition of walls is now considered to be an active action, instead of a passive one due to pressure of adjacent tissues.

It seems reasonable to believe that this elastic

tissue is also responsible for maintenance of tonus in the walls of the closed tube.

Guild has shown that there is less elastic tissue in the tubes of infants and children, thus permitting easier access of infected secretions from the nasopharynx to the middle ear.

In elastorrhexia it is reasonable to assume that the loss of functioning elastic tissue will weaken the protective action of the eustachian tube and its orifice, and predispose such cases to nasopharyngeal infection spreading to the middle ear and its adjacent structures.

A relationship between elastic tissue in the eustachian tube and otitic infection has not been investigated. Etzine and Ovedoff had no reason to inquire about middle ear disease in their cases. It would be illuminating to conduct an investigation into the incidence of elastic tissue in cases with otitic disease, e.g. tympano-eustachian catarrh, otitis media and mastoiditis.

REFERENCES

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J. Fine, F.R.C.S., D.L.O.
706 Medical Centre,
Jeppe Street, Johannesburg.
23 February 1956.

## CHEMICAL TREATMENT OF HYPERTENSION

*To the Editor*: The treatment of hypertension is, in certain circumstances, analogous to the control of diabetes, in that continuity of treatment may be vital. For this reason we beg the courtesy of your columns to announce an alteration in 2 presentations of the hypotensive compounds issued by this Company.

The *retard* solutions of 'Ansolysen' and 'Vegolysen' have been withdrawn, and replaced by by 'Ansolysen' solutions with ephedrine, and 'Vegolysen' solution with ephedrine.

These changes have been made as a result of recent developments in the United States in connexion with attempts to determine the fate in the body of parenterally administered polyvinylpyrrolidone. One U.S. investigator has recorded that in a percentage of rats in which polyvinylpyrrolidone had been injected, neoplastic tissue changes appeared after many months. Leading cancer experts have expressed doubts about the validity of these experiments and about the significance of the results in relation to the use of polyvinylpyrrolidone in man. Nevertheless, we feel that we should withdraw preparations containing this compound. Polyvinylpyrrolidone is, of course, the retarding agent in in 'Ansolysen' and 'Vegolysen' retard solutions.

The new preparations contain the same quantities of hypotensive agents as those which have been discontinued, together with ephedrine to delay absorption from the site of injection. No patient need experience any interruption of treatment.

Other presentations of 'Ansolysen' and 'Vegolysen' will continue to be available without alteration.

J. H. G. Geer,
*Technical Information Department.*
Maybaker (S.A.) (Pty.) Ltd.,
P.O. Box 1130,
Port Elizabeth.
1 March 1956.

## RESEARCH ON RELATION OF DIETARY FAT, ETC. TO BLOOD CHOLESTEROL AND CORONARY HEART DISEASE

*To the Editor*: The Clinical Nutrition Research Unit of the University of Cape Town has had many enquiries arising out of recent press reports on this subject. It is unable to answer all these enquiries personally and makes the following general and very guarded statement:

Coronary heart disease is due to atheroma (associated with hardening) of the coronary arteries, which leads to narrowing and sometimes thrombosis (clotting). The causes of this condition are still unknown in their entirety, but it is clear that there has been a great increase in recent decades among privileged nations and privileged groups within nations, and that many causative factors operate together.

Certain causative factors are not modifiable. The condition is more prevalent in males than in females, and in certain families than in other families. Certain causative conditions can be modified. The ones most under suspicion at present are stress and strain, lack of exercise, heavy cigarette smoking and diet. This Unit has been particularly interested in diet, and especially in the quantity and type of fat consumed in the diet. It recognizes, however, that many other factors are involved, both dietary and non-dietary. The level of blood cholesterol appears to be in some way related to the development of atheroma, although by no means all people with high levels of blood cholesterol have coronary heart disease. There are probably many dietary factors which affect the level of blood cholesterol but one which is under study at present, here and elsewhere, is the quantity and quality of dietary fat. It would appear that moderate reduction of total fat in the diet, so that not more than 25-30% of calories are derived from fats, is beneficial. Apart, however, from the quantity of fat, it is quite clear that one fat differs from another, in the extent to which it affects the blood cholesterol when consumed in the diet. Questions of animal, vegetable or marine origin, of saturation or unsaturation of the fatty acids, of artificial saturation by hydrogenation processes in the food industry, and possibly of chain length and vitamin content, may all be significant.

The Unit is at present unable to give any specific instructions upon dietary or other means of preventing the occurrence or recurrence of coronary heart disease. It advises simply that people should take a reasonable amount of physical exercise up to their ability, that they should moderate their cigarette smoking, and that they should make their diets simple and, in particular, avoid large quantities of rich fatty foods.

Cooking and salad oils have recently been advertised which are prepared from vegetable or marine oils, and which are claimed thereby to be protective against coronary heart disease. The Unit warns against any statement or implication that the problem of coronary heart disease will be solved in so simple a manner.

J. F. Brock, M.D., F.R.C.P.
Department of Medicine,
Medical School,
Observatory, C.P.
9 March 1956.

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